



# **ANNUAL INFORMATION FORM**

**FOR THE FISCAL YEAR ENDED SEPTEMBER 30, 2019**

**December 27, 2019**

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## FORWARD-LOOKING STATEMENTS DISCLAIMER

Certain statements in this Annual Information Form (“AIF”) constitute forward-looking statements or forward-looking information within the meaning of applicable securities laws (“forward-looking statements”). Any statements that express or involve discussions with respect to predictions, expectations, beliefs, plans, projections, objectives, assumptions, potentials, future events or performance (often, but not always, using words or phrases such as “believes”, “expects”, “plans”, “estimates” or “intends” or stating that certain actions, events or results “may”, “could”, “would”, “might”, “will” or “are projected to” be taken or achieved) are not statements of historical fact, but are forward-looking statements.

Forward-looking statements relate to, among other things, the Company’s ability to achieve improvement in free cash flow, the potential to extend the mine life of El Valle Mine (together with Carlés Mine, “El Valle”) in Spain and Don Mario Mine (“Don Mario”) in Bolivia beyond their current life-of-mine estimates, including specifically, but not limited to in the case of Don Mario, the processing of the mineral stockpiles and the reprocessing of the tailings material; the Company’s ability to optimize its assets to deliver shareholder value; the Company’s ability to optimize productivity at El Valle and Don Mario; estimates of future production, operating costs and capital expenditures; mineral resource and reserve estimates; statements and information regarding future feasibility studies and their results; future transactions; future metal prices; the ability to achieve additional growth and geographic diversification; future financial performance, including the ability to increase cash flow and profits; future financing requirements; mine development plans and closing the New Facility. Among other places, forward-looking statements are included in the section of this AIF headed “Description of the Business - Outlook”.

Forward-looking statements are necessarily based upon a number of estimates and assumptions that, while considered reasonable by the Company as of the date of such statements, are inherently subject to significant business, economic and competitive uncertainties and contingencies. The estimates and assumptions of the Company contained or incorporated by reference in this AIF, which may prove to be incorrect, include, but are not limited to, the various assumptions set forth herein or as otherwise expressly incorporated herein by reference as well as: there being no significant disruptions affecting operations, whether due to labour disruptions, supply disruptions, power disruptions, damage to equipment or otherwise; permitting, development, operations, expansion and acquisitions at El Valle and Don Mario being consistent with the Company’s current expectations; political developments in any jurisdiction in which the Company operates being consistent with its current expectations; certain price assumptions for gold, copper and silver; prices for key supplies being approximately consistent with current levels; production and cost of sales forecasts meeting expectations; the accuracy of the Company’s current mineral reserve and mineral resource estimates; and labour and materials costs increasing on a basis consistent with Orvana’s current expectations.

A variety of inherent risks, uncertainties and factors, many of which are beyond the Company’s control, affect the operations, performance and results of the Company and its business, and could cause actual events or results to differ materially from estimated or anticipated events or results expressed or implied by forward-looking statements. Some of these risks, uncertainties and factors include fluctuations in the price of gold, silver and copper; the need to recalculate estimates of resources based on actual production experience; the failure to achieve production estimates; variations in the grade of ore mined; variations in the cost of operations; the availability of qualified personnel; the Company’s ability to obtain and maintain all necessary regulatory approvals and licenses; the Company’s ability to use cyanide in its mining operations; risks generally associated with mineral exploration and development, including the Company’s ability to continue to operate El Valle and/or Don Mario; the ability of the Company to successfully transition operations in Don Mario, from open pit to processing stockpiles and tailings; the Company’s ability to acquire and develop mineral properties and to successfully integrate such acquisitions; the Company’s ability to execute on its strategy; the Company’s ability to obtain financing when required on terms that are acceptable to the Company; challenges to the Company’s interests in its property and mineral rights; current, pending and proposed legislative or regulatory developments or changes in political, social or economic conditions, in the countries in which the Company operates; and general economic conditions worldwide. This list is not exhaustive of the factors that may affect any of the Company’s forward-looking statements and reference should also be made to the section of this AIF headed “Risk Factors” for a description of additional risk factors.

The forward-looking statements made in this AIF with respect to the anticipated development and exploration of the Company’s mineral projects are intended to provide an overview of management’s expectations with respect to certain future activities of the Company and may not be appropriate for other purposes.

Forward-looking statements are based on management's current plans, estimates, projections, beliefs and opinions, and except as required by law, the Company does not undertake any obligation to update forward-looking statements should assumptions related to these plans, estimates, projections, beliefs and opinions change. Readers are cautioned not to put undue reliance on forward-looking statements.

## Cautionary Notes to Investors – Reserve and Resource Estimates

In accordance with applicable Canadian securities regulatory requirements, all mineral reserve and mineral resource estimates of the Company disclosed in this AIF have been prepared in accordance with NI 43-101 (as defined below), classified in accordance with Canadian Institute of Mining Metallurgy and Petroleum's "CIM Standards on Mineral Resources and Reserves Definitions and Guidelines" (the "CIM Guidelines").

Pursuant to the CIM Guidelines, mineral resources have a higher degree of uncertainty than mineral reserves as to their existence as well as their economic and legal feasibility. Inferred mineral resources, when compared with measured or indicated mineral resources, have the least certainty as to their existence, and it cannot be assumed that all or any part of an inferred mineral resource will be upgraded to an indicated or measured mineral resource as a result of continued exploration. Pursuant to NI 43-101, inferred mineral resources may not form the basis of any economic analysis, including any feasibility study. Accordingly, readers are cautioned not to assume that all or any part of a mineral resource exists, will ever be converted into a mineral reserve, or is or will ever be economically or legally mineable or recovered.

## EXPLANATORY NOTES

In this AIF, references to "Orvana" or the "Company" mean Orvana Minerals Corp. and, unless the context requires otherwise, include the subsidiaries of Orvana. Unless otherwise noted herein, information in this AIF is presented as at September 30, 2019.

As at September 30, 2019, the last business day of the Company's fiscal 2019 year, the value of one Canadian dollar was 0.7551 in US dollars and the value of one Euro was 1.0889 in US dollars, according to the Bank of Canada and European Central Bank, respectively.

References in this AIF (i) to gold and silver in ounces mean fine troy ounces and are referred to as "ounces" or "oz", (ii) to copper are in pounds also referred to as "lb", (iii) to the "MD&A" are to the Company's Management's Discussion and Analysis dated November 26, 2019 in respect of the Company's fiscal year ended September 30, 2019 filed at [www.sedar.com](http://www.sedar.com), and (iv) to NI 43-101 are to *National Instrument 43-101 – Standards of Disclosure for Mineral Projects*.

### Documents Incorporated by Reference

The information provided in this AIF is supplemented by disclosure contained in the documents listed below which are incorporated by reference into this AIF. These documents must be read together with the AIF in order to provide full, true and plain disclosure of all material facts relating to Orvana. The documents listed below are not contained within or attached to this document. The documents may be accessed on SEDAR at [www.sedar.com](http://www.sedar.com) under the Company's profile.

| <b>Document</b>   | <b>Effective Date</b> | <b>Date Filed on SEDAR website</b> | <b>Document Category on the SEDAR website</b> |
|---|-----------------------|------------------------------------|---|
| NI 43-101 Technical Report on the El Valle Boínas – Carles Operation, Asturias, Spain (the "El Valle Mine 43-101 Report") | September 26, 2014    | September 29, 2014                 | Technical Report                              |
| NI 43-101 Technical Report on the Don Mario Mine Operation (the "Don Mario Mine 43-101 Report")                           | September 30, 2016    | January 27, 2017                   | Technical Report                              |

## METAL PRICES TABLE

The following table sets forth the closing spot prices for gold, silver and copper as at September 30, 2019:

| <b>Metal</b>         | <b>Price in US Dollars</b> | <b>Price in Euros at 1.0889 (3)</b> |
|----------------------|----------------------------|-------------------------------------|
| Gold per ounce (1)   | \$1,485.30                 | €1,364.04                           |
| Silver per ounce (1) | \$17.25                    | €15.84                              |
| Copper per pound (2) | \$2.60                     | €2.39                               |

- (1) For gold and silver spot prices, please refer to the London Bullion Market Association on [www.lbma.org.uk](http://www.lbma.org.uk).
- (2) For copper spot price, please refer to the London Metal Exchange on [www.lme.com](http://www.lme.com).
- (3) For exchange rate, please refer to the European Central Bank on [www.ecb.europa.eu](http://www.ecb.europa.eu).

## UNIT CONVERSION TABLE

The following table sets forth certain standard conversions between Standard Imperial units and the International System of Units (or metric units):

| <b>To Convert From</b> | <b>To</b>     | <b>Multiply By</b> |
|------------------------|---------------|--------------------|
| Grams                  | Ounces (troy) | 0.03215            |
| Kilograms              | pounds        | 2.20462            |

## CORPORATE STRUCTURE

### Name, Address and Incorporation

The Company was formed by the amalgamation of Pan Orvana Resources Inc. (“Pan Orvana”) and New Kelore Mines Limited (“New Kelore”) pursuant to articles of amalgamation dated February 24, 1992 under the *Business Corporations Act* (Ontario) and an amalgamation agreement between such parties dated December 30, 1991. The name of the amalgamated company was Orvana Minerals Corp.

Pan Orvana was incorporated under the laws of the Province of British Columbia on March 27, 1987 under the name Orvana Resources Inc. and changed its name to Pan Orvana Resources Inc. on September 4, 1987. New Kelore was incorporated by Letters Patent pursuant to the laws of the Province of Ontario on May 9, 1945 under the name Kelwren Gold Mines Limited. In 1948, it changed its name by Supplementary Letters Patent to Kelore Mines Limited and on March 27, 1953, it further changed its name to New Kelore Mines Limited.

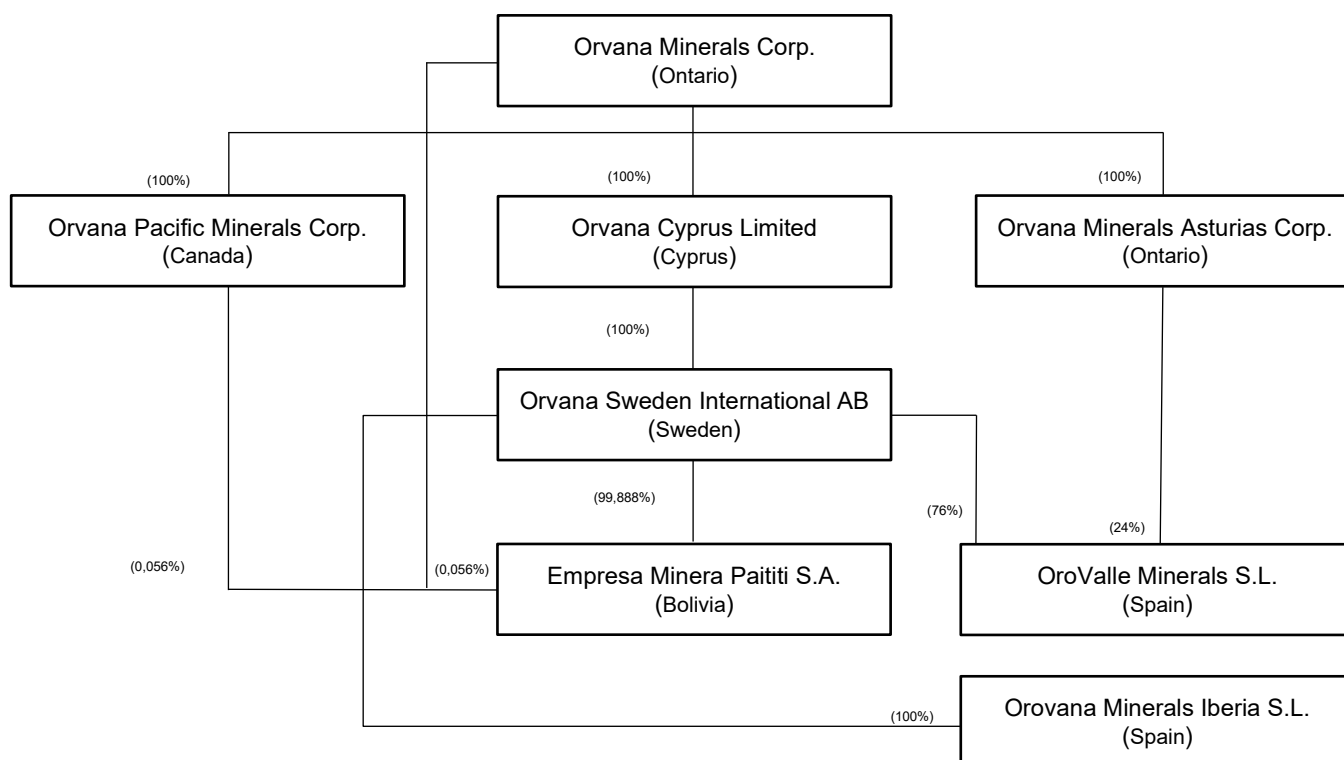
The registered and records office and the head office of the Company are located at 70 York Street, Suite 1710, Toronto, Ontario, Canada M5J 1S9.

The Company’s common shares (“Common Shares”) are listed on The Toronto Stock Exchange under the symbol TSX:ORV.

## Intercorporate Relationships

Historically, Orvana has conducted its exploration, development and production activities in foreign jurisdictions through subsidiary companies incorporated in those jurisdictions. The Company's active subsidiaries and holding companies, all of which are wholly-owned, are as follows: (i) Canada: Orvana Pacific Minerals Corp.; (ii) Ontario: Orvana Minerals Asturias Corp.; (iii) Spain: OroValle Minerals S.L. ("OroValle") and Orvana Minerals Iberia, S.L.; (iv) Cyprus: Orvana Cyprus Limited; (v) Sweden: Orvana Sweden International AB; and (vi) Bolivia: Empresa Minera Paititi S.A. ("EMIPA").

The inter-corporate relationships among Orvana and each of its active and holding subsidiaries are outlined in the diagram below. The diagram below also provides specific information on (i) the percentage of votes attaching to all voting securities of each subsidiary beneficially owned, controlled or directed by Orvana, which is the percentage of total securities owned of each such subsidiary, and (ii) the jurisdiction of incorporation or continuance, as the case may be, of Orvana and each of its subsidiaries (which is set out in parentheses)



Orvana has the following inactive subsidiaries: Minera Orvana Peru S.A, Clarendon Mining Limited, Minera Orvana S.A de CV in Peru, Jamaica, Mexico respectively

# GENERAL DEVELOPMENT OF THE BUSINESS

## Introduction

Orvana is a multi-mine gold-copper-silver producer with organic growth opportunities. Orvana's operating properties consist of:

1. El Valle and Carlés underground mines with their El Valle processing plant (collectively, "El Valle"), producer of copper concentrates and doré bars; located in Asturias, northern Spain; and,
2. The Don Mario Mine Complex ("Don Mario"), a set of assets that includes Cerro Felix satellite open pit, Las Tojas ore body, and the previously mined Lower Mineralized Zone ("LMZ") and Upper Mineralized Zone ("UMZ"), with processing facilities that as of September 30, 2019, produce doré bars, and previously produced copper concentrates, located in Santa Cruz southeastern Bolivia.

Commercial production at El Valle commenced in August 2011. In fiscal 2019, Orvana completed its eighth full year of commercial production at El Valle Mine. Carlés Mine ("Carlés") was placed under care and maintenance during the second quarter of fiscal 2015 due to prevailing market conditions. Since 2016, the Company restarted mining activities at Carlés on four separate occasions on a short-term basis, the last one starting the last quarter of fiscal 2019, taking advantage of near surface mineralized tonnage. Carlés is expected to continue providing skarn material in the future.

At Don Mario, commercial production of the LMZ as an underground gold mine commenced in 2003. In 2011, production transitioned to open-pit mining of the UMZ. Commercial production of the UMZ ended in the first quarter of fiscal year 2017. The Company began mining the upper extension of the LMZ in the second quarter of fiscal 2016, and the LMZ continued to be Don Mario's primary source of ore up to mid-fiscal 2018. Mining of the LMZ deposit was completed and production began to ramp up from the Cerro Felix satellite deposit along the second quarter of fiscal 2018. Stripping activities were initiated at Cerro Felix during the second quarter of fiscal 2018, and the transition of production from the LMZ to Cerro Felix was substantially completed in the second quarter of fiscal 2018. During the fourth quarter of fiscal 2019, mining activities transitioned from Cerro Félix to open pit operations in Las Tojas. In the first quarter of fiscal 2020, the Company decided to suspend mining operations at Las Tojas effective on or before December 31, 2019 because of a higher than expected ore-grade operational mining dilution with more narrow, erratic and discontinued mineralized structures, which resulted in uneconomic unitary cost per ounce.

On May 14, 2019, the Company entered into a purchase agreement with Compañía Minera Taguas S.A. pursuant to which Orvana agreed to acquire the Taguas property ("Taguas") located in the Province of San Juan, Argentina. Taguas consists of 15 mining concessions over an area of 3,273.87 ha. It is located in the Province of San Juan, Argentina, on the eastern flank of the Andes, between 3,500 m to 4,300 m above sea level. On July 9, the Company filed a Preliminary Economic Assessment Report for the Taguas property. Closing of the transaction is subject to the final acceptance of the Toronto Stock Exchange and a number of closing conditions including, without limitation, completion of satisfactory due diligence by Orvana and applicable local mining rights registration.

Orvana's strategic focus is on initiatives and opportunities that deliver long-term shareholder value. In that regard, Orvana is currently working to optimize its operations, reduce its unitary operating costs and realize growth in its future production base through exploration within, and in proximity, to its existing operations.

## Three-Year History

### El Valle

Commercial production at El Valle commenced in August 2011. Carlés was placed on care and maintenance primarily due to market conditions in February 2015. As a result of declining operational performance in fiscal 2015 and 2016, the Company established a development and investment strategy for El Valle to optimize the operation, with the objectives to increase gold production and substantially reduce unitary costs over a two-year period. In late fiscal 2016 and over the course of fiscal 2017, the Company (i) executed significant underground mine development that was deferred from prior years; (ii) re-opened Carlés Mine for a period of approximately one year; (iii) made significant investments in

upgrades to the underground mining fleet; and (iv) substantially completed important infrastructure upgrades to water management equipment and the electricity grid within the El Valle Mine.

During fiscal 2016, the Company focused on increasing development rates, opening additional working faces in the mine and completing planned infrastructure upgrades. In this regard, Orvana obtained a \$12.5 million, 30-month copper concentrates and gold doré prepayment financing (“Prepayment Facility”) with a trading and investment company in London, United Kingdom (the “Financier”), a subsidiary of a diverse multinational corporation in Seoul, South Korea. The proceeds were used primarily to expedite the aforementioned productivity improvements at the El Valle Mine. The proceeds of the Prepayment Facility also supported the restart of mining activity at Carlés Mine and served to increase production in fiscal 2017 while the Company executed on its objectives at the El Valle Mine. As a result of these activities, the Company achieved its objective of producing sufficient ore-feed to run the processing plant at or above capacity of 2,000 tonnes of ore per day and increased gold ounces produced in fiscal 2017 by 15%. Mining activity at the Carlés Mine concluded late in fiscal 2017.

During fiscal 2018, gold production at El Valle increased by 14%, primarily due to higher grades, while copper production decreased by 7% primarily due to lower tonnes milled. The Company restarted a sector of the Carlés Mine as a short-term project during the fourth quarter of fiscal 2018. Plant improvements were developed during fiscal 2018 in order to allow for the processing of a higher ratio of oxide ore. Metallurgical studies were conducted to reduce the buildup of in-process gold from the increase in oxide ore processed in the plant.

In fiscal 2019, the Company continued to target increasing oxide ore production as part of the initiatives to improve ore grade. During fiscal 2019, El Valle produced 64,327 ounces of gold and 5.0 million pounds of copper compared with 58,259 ounces of gold and 5.1 million pounds of copper during fiscal 2018. Gold production increased by 10%, primarily due to higher grades and tonnes milled. Copper production decreased by 2% primarily due to lower grades and recoveries, partially offset by higher tonnes milled.

Throughout fiscal 2019, the Company continued its plant improvements that were developed during fiscal 2018 in order to allow for the processing of a higher ratio of oxide ore. Studies continue to progress to improve copper recoveries in a higher oxide blend, targeting 68% to 72%.

The Carlés short-term project that started in fiscal 2018 was completed in the second quarter of fiscal 2019. A new short-term project started in the fourth quarter of fiscal 2019, providing skarn until the beginning of fiscal 2020. Carlés is expected to continue to provide skarn in the future.

## **Don Mario**

At Don Mario Mine, commercial production commenced at the UMZ in January 2012 and concluded in the first quarter of fiscal year 2017. In fiscal 2015, as a near term mine life extension opportunity, geotechnical and geological reviews were carried out of the old resource block model of the LMZ and the current resource block model of UMZ to investigate the potential of open-pit mining the upper extension of the LMZ. The results of these reviews demonstrated that mining of this upper extension was feasible. A resource estimate for the LMZ was prepared and a technical report documenting this mineral resource estimate was published on November 16, 2015. The Company began replacing tonnes previously mined at the UMZ with production from the LMZ in the second quarter of fiscal 2016. As of September 30, 2016, LMZ resources were upgraded to mineral reserves.

In the first quarter of fiscal 2016, a metallurgical testing program was completed and the results showed that re-commissioning of the carbon-in-leach (“CIL”) circuit in use until 2011 to process the LMZ resource material would maximize the value of the then recently defined Don Mario resource estimates (the “CIL Project”). The Company began construction on the CIL Project in fiscal 2016 and successfully completed re-commissioning in the second quarter of fiscal 2017. To fund the CIL Project, EMIPA used proceeds from a \$7.9 million debt financing with a banking and financial services company in La Paz, Bolivia (the “CIL Project Loan”). Gold recoveries from the CIL circuit exceeded the targeted rate of 80%, as compared with previous average gold recoveries from LMZ material of 55% from the flotation process. As a result, in fiscal 2017, gold production improved to its highest levels since fiscal 2009. The Company increased gold production at Don Mario Mine by 84% in fiscal 2017 and decreased COC and AISC by 23% and 30%, respectively in fiscal 2017.

During fiscal 2017, the Company continued to evaluate opportunities to extend the life of Don Mario Mine beyond the depletion of Cerro Felix. Potential opportunities included (i) processing existing mineral stockpiles; (ii) exploration on the Company’s Las Tojas satellite deposit; (iii) reprocessing of gold-bearing tailings; and (iv) completion of a mine plan for the Company’s Cerro Felix deposit.



During the second quarter of fiscal 2018, the Company initiated stripping activities at Cerro Felix and the transition of production from the LMZ to Cerro Felix was substantially completed in the same quarter. Mined ore from Cerro Felix benefited gold recovery results from the CIL circuit in fiscal 2018, exceeding the Company's expectations, due to its higher estimated gold grades with lower deleterious elements and demonstrated amenability to CIL processing.

During fiscal 2019, Don Mario produced 32,932 ounces of gold compared with 45,125 ounces of gold during fiscal 2018. Gold production decreased by 27% primarily due to the transition from mining LMZ and Cerro Felix satellite deposits during fiscal 2018 to mining Cerro Felix and Las Tojas deposits with lower than expected gold grades during fiscal 2019. During fiscal 2019, the Company also continued to: (i) advance its oxides stockpile project, which is intended to process the oxides stockpile accumulated from previous years of mining activity; and (ii) evaluate the re-processing of tailings to determine the viability of recovering gold from material deposited in the tailings impoundment since the commencement of production at Don Mario.

The following table includes consolidated operating and financial performance data for the Company for the periods set out below:

|   | FY2019    | FY2018    | FY2017     |
|---|-----------|-----------|------------|
| <b>Operating Performance</b>  |           |           |            |
| <i>Gold</i>   |           |           |            |
| Grade (g/t)   | 2.34      | 2.61      | 2.41       |
| Recovery (%)  | 92.6      | 91.7      | 84.7       |
| Production (oz)   | 97,259    | 103,384   | 90,292     |
| Sales (oz)  | 96,540    | 102,018   | 88,636     |
| Average realized price / oz   | \$1,304   | \$1,273   | \$1,258    |
| <i>Copper</i>   |           |           |            |
| Grade (g/t)   | 0.45      | 0.60      | 0.70       |
| Recovery (%)  | 76.3      | 65.9      | 65.4       |
| Production ('000 lbs)   | 5,015     | 8,233     | 13,893     |
| Sales ('000 lbs)  | 5,073     | 8,687     | 14,686     |
| Average realized price / lb   | \$2.77    | \$2.89    | \$2.50     |
| <b>Financial Performance</b> (in 000's, except per share amounts)           |           |           |            |
| Revenue   | \$135,544 | \$145,836 | \$137,999  |
| Mining costs  | \$113,558 | \$120,946 | \$116,370  |
| Gross margin  | (\$1,384) | \$3,156   | (\$5,480)  |
| EBITDA <sup>(1)</sup>   | \$18,065  | \$13,750  | \$16,535   |
| Net loss  | (\$5,266) | (11,097)  | (\$15,555) |
| Net loss per share (basic/diluted)  | (\$0.04)  | (\$0.08)  | (\$0.11)   |
| Operating cash flows before non-cash working capital changes <sup>(1)</sup> | \$18,312  | \$11,864  | \$11,914   |
| Operating cash flows  | \$14,444  | \$1,800   | \$20,726   |
| Ending cash and cash equivalents  | \$12,351  | \$11,634  | \$23,811   |
| Capital expenditures <sup>(2)</sup>   | \$10,880  | \$20,338  | \$21,332   |
| Cash operating costs (by-product) (\$/oz) gold <sup>(1)(3)</sup>            | \$1,094   | \$1,021   | \$1,015    |
| All-in sustaining costs (by-product) (\$/oz) gold <sup>(1)(3)</sup>         | \$1,253   | \$1,259   | \$1,269    |
| All-in costs (by-product) (\$/oz) gold <sup>(1)(3)</sup>                    | \$1,288   | \$1,358   | \$1,348    |

(1) Earnings before interest, taxes, depreciation and amortization ("EBITDA"), operating cash flows before non-cash working capital changes, COC, AISC and AIC are non-IFRS performance measures.

- (2) These amounts are presented in the consolidated cash flows in the audited consolidated financial statements of Orvana as at and for the year ended September 30, 2019 and related notes thereto (the “2019 Financials”) on a cash basis. Each reported period excludes capital expenditures incurred in the period which will be paid in subsequent periods and includes capital expenditures incurred in prior periods and paid for in the applicable reporting period. The calculation of AISC and all-in costs (“AIC”) includes capex incurred (paid and unpaid) during the period.
- (3) COC includes total production cash costs incurred. AISC includes COC plus sustaining capital expenditures, corporate administrative expense, exploration and evaluation costs, and reclamation cost accretion. AIC represents AISC plus non-sustaining capital expenditures, non-sustaining exploration and non-sustaining study costs. Certain other cash expenditures, including tax payments, debt payments, dividends and financing costs are not included in the calculation of AIC. The Company believes that COC plus AISC represents the total costs of producing gold from current operations, and provides the Company and other stakeholders of the Company with additional information relating to the Company’s operational performance and ability to generate cash flows. As the measure seeks to reflect the full cost of gold production from current operations, new project capital is not included in AISC. The Company reports these measures on a gold ounces sold basis.

## El Valle

Through its wholly-owned subsidiary, OroValle, the Company owns and operates its mines located in the Rio Narcea Gold Belt in northern Spain. At El Valle Mine, the Company mines sulphides (referred to hereinafter as “skarns”) and oxides underground. Since acquiring El Valle in 2009, the Company has hired essential personnel, rehabilitated the mill and plant, purchased or leased appropriate equipment, improved the stability of the tailings impoundment, and completed the sinking and subsequent upgrading of a 420-meter shaft to facilitate underground development and mining. The Company commissioned El Valle in May 2011 and advanced to commercial production in August 2011. At Carlés Mine, the Company mined skarns underground until February 2015 when the mine was placed on care and maintenance primarily due to market conditions. In the fourth quarter of fiscal 2016, mining activities restarted at Carlés Mine on a limited, short-term basis, that concluded late in fiscal 2017 and it was placed on care and maintenance. In the last quarter of fiscal 2018, the Company restarted again the activities at Carlés on a new short-term project. The Carlés Mine is expected to continue to deliver skarn material to El Valle in the future.

During fiscal 2019, the production at El Valle of 64,327 ounces gold was 10% higher than the previous year due to a combination of 6% higher throughput and 4% higher head grade. Gold head grade of 3.26 g/t, compared to 3.13 g/t reported in fiscal 2018. Copper production in fiscal 2019 was 5.1 million pounds, compared to 5.1 million pounds in fiscal 2018, with production exceeding guidance. The ratio of oxides to skarns processed in the mill was at the level of 43% during fiscal 2019, increasing to 282,000 tonnes, compared to 37% and 231,000 tonnes during fiscal 2018. The 6% increase in oxides ore milled resulted in a 10% increase to gold production during fiscal 2019, as compared to fiscal 2018.

Mechanical advance rates in oxide areas continued to improve, increasing by 17% to 7,998 metres during fiscal 2019, as compared to fiscal 2018. The Company mined during fiscal 2019 higher gold grade oxide tonnes, and blended them with a ratio of 43% together with skarn ore. Historically, the ratio of mined oxide to skarn ore has been approximately 22% until fiscal 2018.

In fiscal 2019 a SCADA (supervisory control and data acquisition) system was implemented in El Valle Mine to control the ventilation system, with focus on power cost control and air flow optimization. Evaluation of backfill processes continues in progress, to improve logistic efficiencies and materials blend with focus on cost control. A project is in progress to review mine maintenance programs (processes, workforce, technical services), being the main targets equipment availability increase and maintenance cost reduction.

The Company continued its plant improvements in fiscal 2019, in order to allow for the processing of a higher ratio of oxide ore. Studies are progressing to improve copper recoveries in a higher oxide blend, targeting 68% to 72%. Metallurgical studies are also being conducted to reduce the buildup of in-process gold from the increase in oxide ore processed in the plant.

At El Valle, the long-term objectives are to continue to increase production and lower unitary costs. In this regard, the objectives in fiscal 2020 are: (i) increase underground mining fleet reliability by enhancing preventive maintenance programs; (ii) continue reducing unitary costs, based on cost reduction programs in place; (iii) strong conversion of resources into reserves and addition of new resources to the ore bodies extending the current mine life; and (iv) execution of greenfield exploration programs, mainly focused on Ortosa-Godán and Lidia permits.

More information about El Valle Mine is provided below under “Description of the Business - Principal Mineral Projects - El Valle Mine” and “Appendix B - Principal Mineral Projects - El Valle Mine”.

## **Don Mario Mine**

Through its wholly-owned subsidiary, EMIPA, the Company owns and operates Don Mario Mine, located in southeastern Bolivia. Fiscal 2009 marked the final year of production from the underground LMZ gold mine with some gold production from a satellite deposit, Las Tojas, continuing into fiscal 2010 and 2011. Mine start-up of the open pit UMZ above the LMZ occurred in April 2011 and commercial production was achieved in January 2012. Until May 2013, the Company processed UMZ oxides ore through a leach-precipitation-flotation (“LPF”) process and transition and sulphide ore through a standard flotation circuit. In May 2013, after various technical and economic considerations, the Company suspended the LPF process and continued with processing transition and sulphide material through gravity and flotation circuits. Oxide material mined since that time has generally been stockpiled.

In the second quarter of fiscal 2016, the Company began replacing tonnes previously mined at the UMZ with production from the upper extension of the LMZ. In the third quarter of fiscal 2016 the Company began the re-commissioning of the previous CIL circuit, in use until 2011, to process the LMZ resource material, and successfully completed re-commissioning in the second quarter of fiscal 2017. EMIPA phased out the remaining ore from the depleted UMZ in the first quarter of fiscal 2017 and replaced it with production from the upper extension of the LMZ. Gold recoveries from the CIL circuit exceeded the targeted rate of 80%, up from previous average recoveries of 55% from the flotation process. As a result, in fiscal 2017, gold production improved to its highest levels since fiscal 2009. During fiscal 2018, mining activities transitioned from the depleted LMZ to the open-pit Cerro Felix gold satellite deposit, and mine production increased to 856,018 tonnes, supported by the investments made into heavy equipment. Despite the grade reduction, gold production in fiscal 2018 increased to 45,125 ounces.

During fiscal 2019, production of 32,932 ounces gold at Don Mario was 27% lower than the previous year. Gold head grade of 1.51 g/t, compared to 2.16 g/t reported last year, with the decrease mainly due to lower ore grade on the last benches of Cerro Felix open pit. During the fourth quarter of fiscal 2019, mining activities transitioned from Cerro Félix to open pit operations in Las Tojas. In the first quarter of fiscal 2020, the Company decided to suspend mining operations at Las Tojas effective on or before December 31, 2019 because of a higher than expected ore-grade operational mining dilution with more narrow, erratic and discontinued mineralized structures, which is resulting in uneconomic unitary cost per ounce.

Mined from years past, the Company continues to analyze an economic way to treat its oxides stockpile of 2.1 million tonnes (1.85 g/t Au and 1.89% Cu). Commenced in fiscal 2018, the Company continued to evaluate metallurgical alternatives during fiscal 2019 to process the oxides stockpile, and preliminarily concluded that a sulphidization circuit would maximize the value of the stockpile. The Company anticipates that, subject to the favorable completion of technical, economic, funding analysis, and the ability to convert the estimated resources of the oxides stockpile into reserves, the oxides stockpile project is expected to provide three full production years for Don Mario starting in FY2021.

At EMIPA, in the first quarter of fiscal 2020, the Company made the decision to suspend mining operations at Las Tojas effective on or before December 31, 2019. Primary objectives in fiscal 2020 are to: (i) suspend mining and milling operations in an orderly manner; (ii) implement a maintenance and care program; (iii) implement a workforce restructuring program; and (iv) develop a new plant circuit to allow the processing of the oxides stockpile.

More information about Don Mario Mine, including life of mine extension opportunities, is provided below under “Description of the Business - Principal Mineral Projects - Don Mario Mine” and “Appendix B - Principal Mineral Projects - Don Mario Mine”.

## Sale of Copperwood Project

Through its formerly wholly-owned subsidiary, Orvana Resources US Corp., the Company held the Copperwood Project, which was comprised of certain long-term mineral leases, certain surface rights, and options in respect of certain additional mineral leases. The Company had previously completed a feasibility study and obtained all major permits in respect of the development of the Copperwood Project.

In June 2014, the Company sold its Copperwood Project to Highland Copper Company Inc. (“Highland”) through a sale of its formerly wholly-owned subsidiary, Orvana Resources US Corp. The Company received a cash payment of \$13 million and a secured promissory note in the amount of \$7 million (the “Copperwood Note”), which was paid in full in December 2014.

Additional consideration of up to \$5 million is due from Highland in cash or shares of Highland, at Orvana’s option, upon the occurrence of certain events. On June 17, 2017, the Company received a cash payment of \$1.25 million of this additional consideration. A further cash payment of \$250,000 was received on June 15, 2018. During fiscal 2018, the Company entered into an agreement with Highland to extend the timing of payment on the remaining \$1 million and, in return, would charge interest at a rate of 12% per annum if the payment is made no later than November 2018 or an interest rate of 15% per annum and a penalty for any unpaid amount after this date. In fiscal 2019, Highland satisfied its obligation to the Company and paid the remaining \$1 million plus applicable interest.

Of the remaining additional consideration, \$1.25 million may be received if the average copper price for any 60 calendar day period following the first anniversary and preceding the second anniversary of commencement of commercial production is greater than \$4.25/lb. A final \$1.25 million will be paid if the average copper price for any 60 calendar day period following the second anniversary and preceding the third anniversary of the commencement of commercial production is greater than \$4.50/lb.

## Changes in Board of Directors and Management

During fiscal 2019 there have not been any changes in the board of directors and management of the Company.

At the Company’s annual and special shareholders’ meeting held on February 13, 2019, the following members of the board of directors of the Company were re-elected: George Darling, Alan Edwards, Alfredo Garcia Gonzalez, Edmundo Guimaraes, Sara Magnier and Gordon Pridham. On February 13, 2019, the board of directors of the Company re-appointed Mr. Juan Gavidia as its Chief Executive Officer and Ms. Nuria Menendez as its Chief Financial Officer.

## EI Valle Revolving Facilities

In July 2019, OroValle renewed a revolving credit facility with Banco Santander S.A. for an amount of €1,5 million for a one-year term bearing an annual rate of Euribor plus 2.27%. The credit facility is secured by OroValle’s VAT receivable from the Spanish government. As at September 30, 2019, the full amount of the facility was drawn (approximately \$1,6 million), (September 30, 2018 \$1,7 million).

In October 2018, OroValle renewed a revolving credit facility with Bankinter S.A. (“Bankinter”) for an increased amount of €1 million for a three-month renewable term and bearing no interest. An administration fee is charged for each renewal. Under the terms of the agreement, all or part of the financing received must be used for the remittance of payroll tax, VAT and corporate taxes to the Spanish tax agency with payment being processed through the Bankinter account. No security is required to be posted for this facility. As at September 30, 2019, the full amount of the facility was drawn (approximately \$1,1 million), (September 30, 2018 \$1,2 million).

## BISA TSF Loan, Heavy equipment Loan and Revolving Facility

In June 2017, EMIPA closed with BISA Bank a loan denominated in Bolivian currency, of approximately \$11.3 million, comprised of an \$8.3 million term facility (the “BISA TSF Loan”) and a \$3.0 million revolving working capital facility.

The proceeds of the BISA TSF Loan were used to fund a major tailings storage facility expansion project that will add sufficient capacity to support future operations. Under the terms of the BISA TSF Loan, seven disbursements of specified amounts will be drawn down as expenditures are incurred for the tailings storage facility expansion, with the first draw down occurring on June 30, 2017. The BISA TSF Loan matures in January 2021 and has an interest rate of 5.3% per annum, with twelve quarterly repayments beginning in April 2018. As at September 30, 2019, \$8.3 million were drawn down this facility and \$4.1 million of principal were repaid.

The revolving working capital facility of up to \$3.0 million can be drawn down in the form of cash of up to \$2.0 million, bank guarantees of \$3.0 million or a combination of the two up to the limit of \$3.0 million. The revolving working capital facility is renewable every six months until November 2020 and interest will be determined at the date of drawdown and is dependent on the form of the drawdown. As at September 30, 2019, \$1,972 were drawn down from this facility (September 30, 2018 - \$nil). The funds have to be reimbursed jointly with their interests between January and February 2020.

Security for both the BISA TSF Loan and the revolving working capital facility include the CIL asset and other equipment at Don Mario.

In May 2018, EMIPA obtained a new Bolivian loan with BISA of \$2.4 million for heavy equipment purchases. This loan matures in April 2021, it has monthly repayments and interest rate of 5.5% per annum. Security for the loan includes heavy equipment purchased. At September 30, 2019, the total amount was drawn from this loan and \$1.1 million of principal were paid.

### **Banco de Crédito Loan**

In May 2019, EMIPA entered into a Bs.3,430,000 (approximately \$493,000) term facility with Banco de Crédito in Bolivia. This loan bears an interest rate of 6% per annum. Initially it matured in August 2019, but a renewal has been negotiated, so the new repayment date will be January 2020, with a single repayment installment (jointly with the interests). As at September 30, 2019 EMIPA received the \$493,000 disbursement.

### **Prepayment Facility & the New Facility - Spanish local banks**

In August 2016, the Company entered into a \$12.5 million copper concentrates and gold doré prepayment agreement ("Prepayment Facility") with Samsung C&T U.K. Ltd. ("Samsung C&T"), the proceeds of which were invested at El Valle for its ongoing development activities and infrastructure projects.

Under the terms of the Prepayment Facility, Orvana is selling gold doré from its El Valle Mine in Spain and copper concentrate from its Don Mario Mine in Bolivia to Samsung C&T, on an exclusive basis for a period of thirty months. In exchange, Orvana received \$12.5 million in prepayment financing from Samsung C&T in two instalments. The first instalment of \$8.0 million was drawn on closing and the second instalment of \$4.5 million was drawn down in February 2017. Interest payments and principal repayments under the terms of the Prepayment Facility are made against Orvana's on-going shipments of copper concentrates and/or gold doré. Samsung C&T has agreed to pay for copper concentrates and gold doré at a price based on the prevailing metal prices for the gold, silver and copper content around time of shipment, less customary treatment, refining and shipping charges, and pursuant to the terms of the Prepayment Facility.

The Prepayment Facility was amended in March 2018 such that the payments on the remaining principal outstanding at March 2018 was rescheduled and extended by two months, in exchange for a higher interest rate and an extension of gold doré deliveries to April 2020, amongst other terms.

The Company's obligations to Samsung C&T under the Prepayment Facility are secured by the pledge to Samsung C&T of all of Orvana's shares of OroValle, which owns the El Valle and Carlés Mines in Spain.

Throughout fiscal 2018, the Company evaluated financing alternatives with the objective to refinance the Prepayment Facility by extending the repayment period. In January 2019, the Company, through its wholly owned subsidiary OroValle, closed a syndicated credit facility with local Spanish banks (the "New Facility") for a total amount of €6 million. The New Facility is subject to a 2% bank commission fee, bears a fixed interest rate of 2.55%, semi-annual principal repayments and semi-annual interest payments over a term of four years. The Company's obligations to the lenders are secured by: (i) the pledge of all of Orvana's shares of OroValle; (ii) the pledge of OroValle's doré sale proceeds; and (iii) 12.5% restricted cash.

Concurrent with the closing of the New Facility, Orvana repaid the full Prepayment Facility in the amount of \$9.1 million. The Company continues its commercial relationship with Samsung C&T for the sale of copper concentrate from its Don Mario Mine and gold doré from its El Valle Mine.

In May 2019, Orovalle increased the New Facility by an additional €2 million, achieving a total aggregated amount of €8 million (\$8.7 million approximately). The conditions for this funding are the same as the previous tranche (in terms of interest rate, fees, repayment schedule, security and covenants).

In July 2019 OroValle repaid €996,000 (\$1.4 Million approximately) of this facility.

### **Bankinter Loan**

On August 23, 2019, OroValle entered into a new short-term Loan with Bankinter. The principal amounted to approximately \$420,000 and it bears a fixed annual interest rate of 1.5%. This loan matures on September 2020.

For the year ended September 30, 2019, the Company paid \$40,000 in capital and \$nil on interest, respectively on the Bankinter Loan (September 30, 2018 – \$nil and \$nil, respectively).

## **Transactions with Fabulosa Mines Limited - Related Party Transactions**

### **Current Ownership Interest**

As at the date of this AIF, Fabulosa Mines Limited ("Fabulosa") holds (i) 70,915,027 Common Shares, representing 51.9% of the currently outstanding Common Shares. Fabulosa previously held an aggregate of 100,000 Common Share purchase warrants with an exercise price of C\$0.54, that expired July 11, 2019 (the "Warrants").

### **Agreement to Acquire the Taguas Property**

On May 14, 2019, the Company entered into a purchase agreement with Compañía Minera Taguas S.A. (the "Vendor") pursuant to which Orvana agreed to acquire the Taguas property located in the Province of San Juan, Argentina. In consideration for 100% of Taguas, Orvana will grant the Vendor an indivisible net smelter royalty equal to 2.5% on all future metals production mined from Taguas.

Taguas consists of 15 mining concessions over an area of 3,273.87 ha. It is located in the Province of San Juan, Argentina, on the eastern flank of the Andes, between 3,500 m to 4,300 m above sea level. The Property is approximately 25km north of Barrick's Veladero operations.

Pursuant to Multilateral Instrument 61-101 – Protection of Minority Security Holders in Special Transactions ("MI 61-101"), entering into the Purchase Agreement with the Vendor is a "related party transaction" as the Vendor is indirectly owned by Orvana's 51.9% shareholder. The Company is exempt from the requirements to obtain a formal valuation or minority shareholder approval in connection with the transaction contemplated by the Purchase Agreement by virtue of sections 5.5(a) and 5.7(a), respectively, of MI 61-101, as neither the fair market value of the subject matter of the Purchase Agreement, nor the fair market value of the consideration for Taguas exceeds 25% of the Company's market capitalization as calculated in accordance with MI 61-101. The purchase agreement was considered and unanimously approved by the board of directors of the Company. Ms. Sara Wagner abstained from voting on this matter.

The Toronto Stock Exchange ("TSX") has provided conditional acceptance of Orvana's notice of the transaction, pursuant to the TSX Company Manual. Closing of the transaction is subject to the final acceptance of the TSX and a number of closing conditions including, without limitation, completion of satisfactory due diligence by Orvana and applicable local mining rights registration.

The Company filed on July 9, 2019 a NI 43-101 preliminary economic assessment report on Taguas, which is available on [www.sedar.com](http://www.sedar.com)

## DESCRIPTION OF THE BUSINESS

### Principal Mineral Projects

The Company has two material projects described below. To satisfy the reporting requirements of National Instrument 51-102F2 with respect to the Company's material mineral projects, the Company has opted, as permitted by the Instrument, to reproduce the summaries from the technical reports on the respective material properties and to incorporate by reference each such technical report into this AIF. The reproduction of the summaries of the respective properties are set out at Appendix B – Principal Mineral Projects.

#### El Valle Mine

The following table includes consolidated operating and financial performance data for El Valle Mine for the periods set out below:

|  | FY2019   | FY2018    | FY2017     |
|--|----------|-----------|------------|
| <b>Operating Performance</b>   |          |           |            |
| Ore mined (tonnes) (wmt)   | 713,818  | 647,852   | 733,086    |
| Ore milled (tonnes) (dmt)  | 658,046  | 623,137   | 707,362    |
| Daily average throughput (dmt)   | 1,898    | 1,830     | 2,025      |
| <i>Gold</i>  |          |           |            |
| Grade (g/t)  | 3.26     | 3.13      | 2.46       |
| Recovery (%)   | 93.2     | 92.9      | 92.2       |
| Production (oz)  | 64,327   | 58,259    | 51,546     |
| Sales (oz)   | 62,249   | 56,136    | 49,518     |
| <i>Copper</i>  |          |           |            |
| Grade (%)  | 0.45     | 0.47      | 0.46       |
| Recovery (%)   | 76.3     | 80.1      | 75.6       |
| Production ('000 lbs)  | 5,015    | 5,123     | 5,506      |
| Sales ('000 lbs)   | 5,073    | 4,901     | 5,590      |
| <b>Financial Performance</b> <i>(in 000's, except per share amounts)</i> |          |           |            |
| Revenue  | \$90,259 | \$80,204  | \$71,556   |
| Mining costs   | \$70,006 | \$72,722  | \$73,268   |
| Loss before income tax   | \$2,234  | (\$9,390) | (\$20,944) |
| Capital expenditures   | \$8,689  | \$6,461   | \$9,702    |
| Cash operating costs (by-product) (\$/oz) gold <sup>(1)</sup>            | \$1,004  | \$1,129   | \$1,293    |
| All-in sustaining costs (by-product) (\$/oz) gold <sup>(1)</sup>         | \$1,185  | \$1,331   | \$1,574    |
| All-in costs (by-product) (\$/oz) gold <sup>(1)</sup>                    | \$1,190  | \$1,331   | \$1,574    |

(1) COC includes total production cash costs incurred. AISC includes COC plus sustaining capital expenditures, corporate administrative expense, exploration and evaluation costs, and reclamation cost accretion. As the measure seeks to reflect the full cost of gold production from current operations, new project capital is not included in AISC. AIC represents AISC plus non-sustaining capital expenditures and non-sustaining exploration. Certain other cash expenditures, including tax payments, debt payments, dividends and financing costs are also not included in the calculation of AIC. The Company reports these measures on a gold ounces sold basis.

During fiscal 2019, El Valle produced 64,327 ounces of gold and 5.0 million pounds of copper compared with 58,259 ounces of gold and 5.1 million pounds of copper during fiscal 2018. Gold production increased by 10%, primarily due to higher grades and tonnes milled. Copper production decreased by 2% primarily due to lower grades and recoveries, partially offset by higher tonnes milled. Mechanical advance rates in oxide areas continued to improve, increasing by 17% to 7,998 metres during fiscal 2019, as compared to fiscal 2018.

During fiscal 2015, OroValle and its workers' legal representatives signed a Collective Bargaining Agreement (the "CBA") which was applied retroactively from January 1, 2014 and covers the period up to December 31, 2017. Upon expiry of the Agreement there is an automatic two years extension, unless the parties agree to a new CBA. The extension is currently in place, as the negotiation of the new CBA is in progress. The Agreement regulates labour conditions and includes regulations related to risk prevention, salaries and working hours. The Agreement also strengthens the position of the mining safety officer present at all mining facilities and also focuses on employee training and diversity as key objectives. OroValle is currently negotiating the final terms and conditions of the new CBA and expects to complete the negotiations in early fiscal 2020.

## Exploration

Since OroValle's involvement with El Valle Mine, there have been exploration and key discoveries at El Valle Mine and Carlés Mine.

The gold-copper deposits in the Río Narcea Gold Belt are complex deposits that present challenges for exploration. The original mineral deposits are usually internally complex skarn deposits that have been subjected to epithermal alteration and remobilization of the mineralization, plus displacement and distortion by both high-angle reverse and thrust faults. In addition, individual ore zones may be high grade, but relatively small and difficult to locate.

Despite these challenges, the area was sufficiently well mineralized that continued exploration at El Valle Mine found enough new resources to extend the mine life by 24% and to increase the amount of gold mined by 43% over the reserve at the beginning of mining.

The Black Skarn North was discovered in 2001 by underground drilling at the north boundary of the main El Valle intrusive. The discovery drill hole, Val-1001, intersected 3.2 g/t Au and 0.54% Cu over 46 m, which includes high grade areas containing 10.17 g/t Au and 2.4% Cu over 7.60 m. At the same time, the Charnela South was also discovered by underground drilling.

In 2003, a program looking for deeper mineralization east of El Valle pit discovered the Area 208 zone by intersecting mineralization from a deep surface hole. This was followed by further drilling from the bottom of El Valle open pit and the first drill hole, Val-208, intersected 10.80 g/t Au over 51.10 m near the open pit and another zone with 13 g/t Au over five metres further east of the pit.

The Area 107 (A107) and San Martín mineralized zones were discovered in 2007 and 2008, and in 2010 the S107 Zone was discovered. In 2011, mineralization was encountered in the Black Skarn Northwest Zone.

In 2013 and 2014 the Black Skarn area was extended from Northwest to West and in Carlés North there was defined mineralization at depth with an exploration program for this purpose.

The Villar oxide zone, located in the eastern side of the El Valle Mine behind the A107 area, was discovered in 2015, while testing for mineralization that may have been shadowed by the existing resource. An eleven holes drilling program totaling 1,223 metres was completed to intersect this zone, with ten out of the eleven holes intersecting ore grade mineralization.

In 2016 and 2017, oxide mineralization with ore grade was intercepted in the upper part of the Black Skarn Northwest Zone (OBS), which was included as a new area in the Boinas oxide Resources Estimate. This area had good potential and was a target area for the drilling campaign. In April 2017, an exploration drilling program was started in the lower area of the Carlés Northwest orebody. 3,869 metres were completed in 42 DDH's, with success to increase the resources.

Along 2018 a drilling program was completed to define the Oxide Black Skarn (OBS), the good grades and due to the proximity with the actual developments, this structure was started to be mined in the second half of 2018. Drilling to extend the Villar zone and A107 to the South was completed too.

In September 2018 an exploration drilling program was started in Quintana Investigation Permit focused on testing the geochemistry and geophysics anomalies found in the field work. Two drill holes were completed totaling 1202.8 mts during H1 FY2019 to confirm the existence of gold within the main regional structure two kilometres away from the Boinás mine. The drilling program in 2019 was aimed to convert the inferred resources into measured and indicated resources in oxides areas mainly and, secondly, to add new inferred resources.



## Drilling

The Resources Estimate includes the drill hole information up to June 30, 2019. At the end of fiscal 2019, drilling has totaled approximately 461,320 metres in 4,567 holes, of which Orvana drilled approximately 197,601 metres in 1,472 holes. In fiscal 2019, El Valle completed 23,693 metres of infill definition and exploration diamond drilling over 147 drill holes. The main focus areas in the FY2019 drilling program were oxides zones, similar to FY2018. 16,355 mts were completed in Area 107, Area 208, Villar zone and High Angle, to convert Inferred resources into Measured and Indicated category in oxides areas. 3,205 mts were drilled in skarn areas with the same purpose.

In addition, 4,152 metres were focused on defining new resources in these and other potential areas and a 924 mts were completed in greenfield at the Quintana Permit (details below).

5,240 mts were completed in A107, most of them were focused to convert Inferred resources into Measured and Indicated resources in the upper part of the structure and to increase the grade confidence for the mine plan production. This program will be completed in FY2020.

4,949 mts were completed in Area 208, in an oxide structure located at the north of Area 107. Target in this zone was to define the oxide structure and to have a better understanding of the mineralization control. As a result of this drilling, Inferred resources were converted into Indicated resources. In addition to this, 1,744 mts were drilled to extend the orebody and add new resources. The plan for FY2020 is continue converting Inferred resources in this area and to explore the potential in this area looking for oxides structures similar to Area 208.

Villar zone is an oxide structure close to Area 107 too. In this zone 1,815 mts were carried out to convert Inferred resources into Measured and Indicated resources. A few metres, 574, were focused to extend the orebody.

An infill drilling program in High Angle started in the second half of FY2019. High Angle is an area with narrow oxides structures N35°E close to Boinas East. These structures are subvertical (High Angle) and with high Au and Cu grades. 4,397 mts were completed in this zone to define this narrow bands. As a result of this drilling program, Inferred resources were converted into Indicated resources. Along to FY2020 Orovalle will continue drilled with the target to define the extension of these structures.

3,046 mts were drilled in Black Skarn to convert Inferred resources into Measured and Indicated resources. 699 mts of this program were focused on brownfield to look for the extension in the oxide area in Black Skarn. Geologically this oxide structure is limited by faults whereby lateral continuity is lost.

A small drilling campaign was carried out in Boinas East with 859 mts. The program allowed to convert Inferred resources into Measured in skarn material, defining a stope sequence that will be mined in FY2020.

In order to identify new mineralized areas, two exploration drill holes with 1,069 mts in total were drilled up to Black Skarn and Boinas South orebodies, although skarn lithology was intersected, grades were lower than expected.

At the Quintana property (Investigation Permit located to the South of El Valle Concessions) two drill holes were completed. The first drill hole started at the end of fiscal 2018 and the second drill hole was completed in March 2019 totaling 1202.8 mts. These drill holes were planned after detecting anomalies with soil geochemistry and geophysics works. Both holes intersected mineralized structures within the first 100 mts but no feeder zone or intrusive was reached at depth. It has been possible to prove the existence of gold within the main regional structure two kilometres away from the Boinás mine.

Subsequent to the El Valle Mine 43-101 Report, the Company continued to pursue opportunities to define new resources in different satellite projects. An important number of environmental, archeological and other studies were done along FY2019 as requirement in order to start with greenfield drilling programs in the next fiscal year.

For the skarns and some of the epithermal oxide zones, drill holes tend to intercept the mineralization at varying angles relative to the core axis attributed to drill access and the irregular morphologies of the mineral zones. More regular, planar deposits such as A107 have better drilling angles, especially when drilling to depth. In general, drilling is spaced between 20 m and 40 m in active or exploited mining areas. Drilling density away from the core of the underground mine and beneath previous pits is generally greater than 40 m and can be in excess of 100 m in lesser explored areas.

The majority of the holes drilled are HQ diameter with the exception of some NQ core at Carlés Mine and some PQ core for metallurgical purposes. Core boxes are transported daily from underground, delivered to the core shed and laboratory facility in Begega. The core is photographed wet with the name of the hole and the depth. The core is then laid on core logging benches awaiting both geotechnical and geological logging by the OroValle geologists.

A Rock Mass Rating (RMR) is then determined by the geologist and is later entered into the geological database. The RMR is also stored in the block models and is used for mine planning purposes. Once the geotechnical logs are complete, geologists proceed to log lithology, alteration, mineralization and structure using pre-defined geological legends. The logs are hard copy hand written logs with graphical representations of the down hole geology. The start and end of geological units are marked on the boxes. Upon completion of the geotechnical logging, geological logging, sampling and density calculation, the hand-written logs are transferred to the senior geologist who scans the logs and enters the information into the Recmin database. Collar locations are measured during drilling by underground surveyors. The collar location, azimuth and inclination of the drill hole are measured and are subsequently used to replace pre-entered planned collar locations in the drill hole database. Down hole survey measurements are conducted using a Reflex Maxibor instrument. Data is exported from the instrument and then transferred to the drill hole database.

### Sampling, Analysis and Data Verification

On average, 6,221 samples were assayed per month in fiscal 2019, consisting of exploration core, underground grade control samples, mill samples and environmental samples. OroValle has its own on-site assay laboratory located on the hill side in Begega, above the El Valle open pit, approximately 15 minutes by road from the administration and processing facilities for the mine. Both sample preparation and analysis are performed at the laboratory. The laboratory is ISO 9001:2015 certified which is renewed each year.

Regarding the drill core sampling, intervals selected for assaying are marked on the boxes, the sample code corresponding to the drill hole identification number and the sample depth. The target sampling length is 1.5 metres, rarely exceeding two metres. The minimum sampling length is 25 cm. Samples are taken on either side of the mineralization. Any drill core zone not sent for assaying is discarded while the core selected for sampling is split, half the core is assayed and the remaining half of the core is returned to the core box and stored in covered core storage facilities near the logging facility.

At El Valle Mine, grade control sampling consists of: underground face channels of 1.0 metre in length over the entire face and the walls unless a litho-structural break can be identified, sampling of muck piles at active headings or remucks and sampling of surface stockpiles with demarcated stockpiles on a round per round and stope by stope basis. El Valle Mine underground channel samples are not used for resource estimation for the following reasons:

- sampling of the oxide faces is problematic due to the timing of ground support/heading availability and only partial exposure of the face due to shotcrete cover; and
- face channel samples represent a different volume support as compared to drill core samples (face channel samples are typically longer than the average drill core sampling length).

At Carlés Mine, underground face channel samples were taken following a nominal 1.2 metres intervals and litho-structural boundaries. Given the similarity in sample support and the layered nature of the Carlés Mine zones, the underground channel samples are used for resource estimation.

Density information is collected after logging at a density measurement station within the core logging facility. The density sample is returned to the box after density measurement. For highly fractured zones where density measurements cannot be reliably measured using the methodology described, densities were determined based on production results.

In terms of sample preparation, once split, drill core samples are placed in a metallic sample tray with a large envelope containing two adhesive barcoded labels and one barcoded label pasted to the envelope. The remaining labels are stored within the envelope to accompany the sample throughout the sample preparation process.

The sample preparation procedure is as follows:

- The seven kilogram core samples are dried at a temperature of 105°C.
- The entire dried sample is crushed through a jaw crusher to 95%<6 mm.

- The coarse-crushed sample is further reduced to 95% <425 microns using an LM5 bowl-and-puck pulverizer.
- An Essa rotary splitter is used to take a 450 g to 550 g sub-sample of each split for pulverizing. The remaining reject portion is bagged and stored.
- The sample is reduced to a nominal -200 mesh using an LM2 bowl-and-puck pulverizer.
- 140 g sub-samples are split using a special vertical-sided scoop to cut channels through the sample which has been spread into a pancake on a sampling mat.
- Samples are then sent to the laboratory for gold and base metal analysis. Leftover pulp is bagged and stored.

After sample preparation, 30 g samples are analyzed for Au by fire assay with an atomic absorption spectroscopy (AAS) finish and two-gram samples for Ag, As, Bi, Cu, Hg, Pb, Sb, Se, and Zn by ICP-optical emission spectroscopy (ICP-OES) after an aqua regia digestion. Assay results are received by the mine site geological personnel to be entered into the drill hole database.

The quality assurance/quality control program involves submitting certified reference material, blanks, and duplicate samples into the sample stream. The on-site senior geologist reviews the results prior to acceptance of the assay results.

Orvana currently performs the following data verification steps prior to finalization of the data:

- collar surveys conducted by in-house personnel are entered in a spreadsheet, transformed to UTM coordinates and checked by the project geologist;
- geological logs are entered into a spreadsheet by the geologist responsible for logging the hole, and when complete the database geologist checks and adds the data into the database;
- results received from the labs are subject to quality assurance/quality control which is reviewed by the project geologist;
- data entered into the RecMin database is subject to numerous controls to identify gaps, double- entry, overlaps, duplication, and absent values; and
- The drillhole database is then imported in Datamine software package where it is also checked and validated before use for the resource modelling by the resource geologist.

## Mineral Resources and Reserves Estimates

In fiscal 2014, the Company engaged an independent engineering firm, Roscoe Postle Associates Inc. ("RPA"), to complete mineral reserves and resources estimates and a life-of-mine-plan update, which were published in the "Technical Report on El Valle Boinás-Carlés Operation, Asturias, Spain" dated September 26, 2014 by Mr. Jason J. Cox, P.Eng., who is a qualified person independent of the Company for the purposes of NI 43-101, and filed on September 29, 2014 ("El Valle Mine 43-101 Report").

Reproduced at "Appendix B - Principal Mineral Projects - El Valle Mine" is the summary section of the El Valle Mine 43-101 Report. The full text of the El Valle Mine 43-101 Report is available for viewing on SEDAR at [www.sedar.com](http://www.sedar.com) and is incorporated by reference in this AIF. Defined terms and abbreviations used herein and not otherwise defined shall have the meanings ascribed to such terms in the El Valle Mine 43-101 Report.

Since the El Valle Mine 43-101 Report, the Company has updated the mineral reserves and resources. The updated mineral resource estimates for El Valle as at September 30, 2019 were prepared by OroValle under the supervision of Ms. Guadalupe Collar Menéndez, European geologist and the Chief of Geology of OroValle, based on updating resource block models incorporating drilling results from July 1, 2018 to June 30, 2019 and accounting for production depletion up to September, 2019. Mineral resource estimates are summarized in the tables below.

**SUMMARY OF MINERAL RESOURCES INCLUSIVE OF MINERAL RESERVES - SEPTEMBER 30,  
2019  
El Valle – Carlés – La Brueva**

**Measured**

| <b>Zone</b>   | <b>Tonnes<br/>(kt)</b> | <b>Au<br/>(g/t)</b> | <b>Cu<br/>(%)</b> | <b>Ag<br/>(g/t)</b> | <b>Au<br/>(koz)</b> | <b>Cu<br/>(kt)</b> | <b>Ag<br/>(koz)</b> |
|---------------|------------------------|---------------------|-------------------|---------------------|---------------------|--------------------|---------------------|
| BOINÁS OXIDES | 589.4                  | 4.28                | 0.67              | 18.24               | 80.9                | 3.9                | 345.6               |
| BOINÁS SKARN  | 2,255.8                | 2.95                | 0.84              | 18.17               | 214.0               | 19.0               | 1317.6              |
| CARLES        | 173.0                  | 4.01                | 0.64              | 11.02               | 22.3                | 1.1                | 61.3                |
| <b>TOTAL</b>  | <b>33,18.2</b>         | <b>3.27</b>         | <b>0.79</b>       | <b>17.77</b>        | <b>317.2</b>        | <b>24.0</b>        | <b>1,724.5</b>      |

**Indicated**

| <b>Zone</b>   | <b>Tonnes<br/>(kt)</b> | <b>Au<br/>(g/t)</b> | <b>Cu<br/>(%)</b> | <b>Ag<br/>(g/t)</b> | <b>Au<br/>(koz)</b> | <b>Cu<br/>(kt)</b> | <b>Ag<br/>(koz)</b> |
|---------------|------------------------|---------------------|-------------------|---------------------|---------------------|--------------------|---------------------|
| BOINÁS OXIDES | 1,911.2                | 6.01                | 0.47              | 6.29                | 369.4               | 8.9                | 386.2               |
| BOINÁS SKARN  | 423.8                  | 3.12                | 0.70              | 18.51               | 42.5                | 3.0                | 252.2               |
| CARLES        | 1006.2                 | 3.87                | 0.47              | 9.11                | 125.0               | 4.7                | 294.6               |
| <b>TOTAL</b>  | <b>3,341.2</b>         | <b>5.00</b>         | <b>0.50</b>       | <b>8.69</b>         | <b>536.9</b>        | <b>16.6</b>        | <b>933.0</b>        |

**Measured + Indicated**

| <b>Zone</b>   | <b>Tonnes<br/>(kt)</b> | <b>Au<br/>(g/t)</b> | <b>Cu<br/>(%)</b> | <b>Ag<br/>(g/t)</b> | <b>Au<br/>(koz)</b> | <b>Cu<br/>(kt)</b> | <b>Ag<br/>(koz)</b> |
|---------------|------------------------|---------------------|-------------------|---------------------|---------------------|--------------------|---------------------|
| BOINÁS OXIDES | 2,500.4                | 5.60                | 0.52              | 9.11                | 450.4               | 13.0               | 731.9               |
| BOINÁS SKARN  | 2,679.6                | 2.98                | 0.82              | 18.22               | 256.7               | 21.9               | 1,569.8             |
| CARLES        | 1,179.2                | 3.89                | 0.49              | 9.39                | 147.4               | 5.7                | 355.8               |
| <b>TOTAL</b>  | <b>6,359.2</b>         | <b>4.18</b>         | <b>0.64</b>       | <b>13.00</b>        | <b>854.6</b>        | <b>40.6</b>        | <b>2,657.5</b>      |

**Inferred**

| <b>Zone</b>   | <b>Tonnes<br/>(kt)</b> | <b>Au<br/>(g/t)</b> | <b>Cu<br/>(%)</b> | <b>Ag<br/>(g/t)</b> | <b>Au<br/>(koz)</b> | <b>Cu<br/>(kt)</b> | <b>Ag<br/>(koz)</b> |
|---------------|------------------------|---------------------|-------------------|---------------------|---------------------|--------------------|---------------------|
| BOINÁS OXIDES | 2,143.2                | 5.18                | 0.46              | 4.75                | 356.9               | 10.0               | 327.2               |
| BOINÁS SKARN  | 215.5                  | 2.74                | 0.62              | 16.35               | 19.0                | 1.3                | 113.3               |
| CARLES        | 943.2                  | 4.33                | 0.42              | 5.34                | 131.2               | 4.0                | 161.8               |
| <b>TOTAL</b>  | <b>3,301.9</b>         | <b>4.78</b>         | <b>0.46</b>       | <b>5.67</b>         | <b>507.1</b>        | <b>15.3</b>        | <b>602.3</b>        |

**Inferred**

| <b>Zone</b> | <b>Tonnes<br/>(kt)</b> | <b>Au<br/>(g/t)</b> | <b>Cu<br/>(%)</b> | <b>Ag<br/>(g/t)</b> | <b>Au<br/>(koz)</b> | <b>Cu<br/>(kt)</b> | <b>Ag<br/>(koz)</b> |
|-------------|------------------------|---------------------|-------------------|---------------------|---------------------|--------------------|---------------------|
| LA BRUEVA   | 122.8                  | 4.51                | 0.10              | 19.30               | 17.8                | 0.1                | 76.2                |

## Notes

1. CIM definitions were followed for mineral resources.
2. Mineral resources are estimated at gold equivalent ("AuEq") cut-off grades of 3.3 g/t for El Valle oxides, 2.7 g/t for El Valle skarns and 2.7 g/t for Carlés Mine skarns. AuEq cut-offs are based on recent operating results for recoveries, off-site concentrate costs and on-site operating costs.
3. Mineral resources are estimated using a long-term gold price of US\$1,350 per ounce; copper price of US\$3.25 per pound; and a silver price of US\$18 per ounce. A US\$/Euro exchange rate of 1/1.20 was used.
4. Mineral resources are inclusive of mineral reserves.
5. A crown pillar of 60 m is excluded from the mineral resource below El Valle open pit.
6. A crown pillar of 40m is excluded from the mineral resource below Boinas East open pit.
7. Unrecoverable material in exploited mining areas has been excluded from the mineral resource.
8. Numbers may not add due to rounding.
9. El Valle mineral resources estimates were prepared under the supervision G. Collar, European Geologist, a qualified person for the purposes of NI 43-101, who is an employee of OroValle and thus not independent of the Company.

Mineral reserves were estimated by OroValle under the supervision of Mr. Brian W. Buss, Peng., based on mine designs applied to measured and indicated resources, taking into account appropriate dilution and extraction factors. Mr. Buss, a Professional Mining Engineer, registered in the province of Ontario, Canada, is a qualified person independent of the Company for the purposes of NI 43-101. Mineral reserves are summarized in the table below.

### SUMMARY OF MINERAL RESERVES - SEPTEMBER 30, 2019 El Valle - Carlés

| Proven and Probable        |                    |                   |                 |                   |                                   |                                  |
|----------------------------|--------------------|-------------------|-----------------|-------------------|-----------------------------------|----------------------------------|
| Category                   | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(000 t Cu) |
| Proven                     | 975                | 2.81              | 0.70            | 15.54             | 88                                | 6.9                              |
| Probable                   | 1,153              | 3.86              | 0.39            | 6.07              | 143                               | 4.5                              |
| <b>Proven and Probable</b> | <b>2,128</b>       | <b>3.37</b>       | <b>0.53</b>     | <b>10.41</b>      | <b>231</b>                        | <b>11.4</b>                      |

| Proven          |                    |                   |                 |                   |                                   |                                  |
|-----------------|--------------------|-------------------|-----------------|-------------------|-----------------------------------|----------------------------------|
| Category        | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(000 t Cu) |
| El Valle Oxides | 318                | 3.52              | 0.55            | 15.96             | 36                                | 1.8                              |
| El Valle Skarns | 649                | 2.44              | 0.77            | 15.36             | 51                                | 5.0                              |
| Carlés Skarns   | 8                  | 4.05              | 1.37            | 13.24             | 1                                 | 0.1                              |
| <b>Total</b>    | <b>975</b>         | <b>2.81</b>       | <b>0.70</b>     | <b>15.54</b>      | <b>88</b>                         | <b>6.9</b>                       |

| Probable        |                    |                   |                 |                   |                                |                               |
|-----------------|--------------------|-------------------|-----------------|-------------------|--------------------------------|-------------------------------|
| Category        | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained Metal<br>(000 oz Au) | Contained Metal<br>(000 t Cu) |
| El Valle Oxides | 781                | 4.54              | 0.39            | 4.27              | 114                            | 3.1                           |
| El Valle Skarns | 165                | 2.29              | 0.59            | 14.97             | 12                             | 1.0                           |
| Carlés Skarns   | 207                | 2.55              | 0.23            | 5.71              | 17                             | 0.5                           |
| <b>Total</b>    | <b>1,153</b>       | <b>3.86</b>       | <b>0.39</b>     | <b>6.07</b>       | <b>143</b>                     | <b>4.5</b>                    |

**Notes:**

1. CIM definitions were followed for mineral reserves.
2. Mineral reserves are estimated using gold equivalent break-even cut-off grades by zone and mining method, consisting of 4.35 g/t AuEq for El Valle cut and fill Skarn, 2.92 g/t AuEq for El Valle sublevel stoping Skarn, 3.42 g/t AuEq for Carlés longhole stoping Skarn, 4.20 g/t AuEq for El Valle cut and fill Oxides, and 4.19 g/t AuEq for El Valle sublevel stoping Oxides. Gold equivalent cut-offs are based on recent operating results for recoveries, off-site concentrate costs and on-site operating costs.
3. Mineral reserves are estimated using average long-term prices of US\$1,250 per ounce gold, US\$3.00 per lb copper, and US\$16.00 per ounce silver. A US\$/Euro exchange rate of 1/1.2 was used.
4. A minimum mining width of 4 m was used.
5. A no-mining standoff distance of 75m under the Tailings Storage Facility has been applied.
6. A no-mining standoff distance of 42 meters under the Boinás-East old pit has been applied.
7. A no-mining sterilization zone of 4.5 meters below already mined cut and fill developments has been applied
8. A no-mining sterilization zone of 10 meters below already mined stopes
9. A no-mining sterilization zone of 5 meters around waste filled stopes has been applied
10. A portion of the reserves contains incremental material (below break-even cut –off grade). This material was included in the mineral reserves in order to maintain optimum production levels.
11. Numbers may not add due to rounding.
12. El Valle mineral reserve estimates were prepared under supervision of Brian Buss, a qualified person for the purposes of NI 43-101, who is an independent consultant of the Company.

Skarn reserves are evaluated at a break-even cut-off grade of 2.92 g/t AuEq. This average factor resulted from a detailed analysis, which started with a factor of 2.92 g/t AuEq (initial cut-off grade factor calculated and based on the planned data), but which was filled with portions of skarn of 2.68 g/t, and 2.14 g/t AuEq for the purpose of obtaining the optimal grade of skarn to sustain mill feed of 50% skarn; 50% oxides.

**Growth Exploration**

During fiscal 2019, 1,744 mts were drilled in A208, looking for continuity between Villar and Area 208 orebodies; the mineralization intersected is narrow and very discontinued. In Black Skarn, 699 mts were drilled to define the continuity of a mineralized skarn band into the limestone and looking for the extension of the oxide area above Black Skarn. Geologically this oxide structure is limited by faults whereby lateral continuity is lost. Two exploration drill holes with 1,069 mts in total were drilled above Black Skarn and Boinas South orebodies; although skarn lithology was intersected, grades were lower than expected. Orovalle is targeting 8,000 mts of brownfield drilling for fiscal 2020, mainly focused on El Valle north oxides structures and Carlés.

Fiscal 2019 greenfield works were focused on Quintana permit, where 924 mts were drilled. The Company is currently evaluating the results to define next steps for the permit. For fiscal 2020, the greenfield drilling campaign includes 8,000 mts, focused on Ortosa Godán and Lidia permits.

The Company is also pursuing grassroots exploration activities, such as mapping, sampling, on certain other investigation permits concessions in the vicinity of El Valle.

**Other**

Additional information on El Valle Mine is provided below in “Appendix B - Principal Mineral Projects - El Valle Mine”.

## Don Mario Mine

The following table includes operating and financial performance data for Don Mario Mine for the periods set out below:

|   | FY2019    | FY2018   | FY2017   |
|---|-----------|----------|----------|
| <b>Operating Performance</b>                                      |           |          |          |
| Ore mined (tonnes) (dmt) <sup>(1)</sup>                           | 745,846   | 856,018  | 718,692  |
| Ore milled (tonnes) (dmt)   | 739,635   | 719,328  | 668,376  |
| Daily average throughput (dmt)                                    | 2,185     | 2,188    | 2,088    |
| <i>Gold</i>   |           |          |          |
| Grade (g/t)   | 1.51      | 2.16     | 2.36     |
| Recovery (%)  | 91.2      | 90.2     | 74.0     |
| Production (oz)   | 32,932    | 45,125   | 38,746   |
| Sales (oz)  | 34,291    | 48,882   | 38,963   |
| <i>Copper</i>   |           |          |          |
| Grade (%)   | -         | 0.72     | 0.95     |
| Recovery (%)  | -         | 53.7     | 60.6     |
| Production ('000 lbs)   | -         | 3,110    | 8,387    |
| Sales ('000 lbs)  | -         | 3,786    | 9,091    |
| <b>Financial Performance</b> (in 000's, except per share amounts) |           |          |          |
| Revenue   | \$45,287  | \$65,632 | \$66,443 |
| Mining costs  | \$43,552  | \$48,224 | \$43,102 |
| Income (loss) before tax  | \$(3,906) | \$6,076  | \$11,889 |
| Capital expenditures  | \$2,929   | \$12,652 | \$12,249 |
| Cash operating costs (by-product) (\$/oz) gold                    | \$1,256   | \$890    | \$663    |
| All-in sustaining costs (by-product) (\$/oz) gold                 | \$1,361   | \$1,087  | \$871    |
| All-in costs (by-product) (\$/oz) gold                            | \$1,429   | \$1,287  | \$1,050  |

During fiscal 2019, Don Mario produced 32,932 ounces of gold compared with 45,125 ounces of gold during fiscal 2018. Gold production decreased by 27% primarily due to the transition from mining LMZ and Cerro Felix satellite deposits during fiscal 2018 to mining Cerro Felix and Las Tojas deposits with lower than expected gold grades during fiscal 2019.

During the fourth quarter of fiscal 2019, mining activities transitioned from Cerro Félix to open pit operations in Las Tojas. In the first quarter of fiscal 2020, the Company decided to suspend mining operations at Las Tojas effective on or before December 31, 2019 because of a higher than expected ore-grade operational mining dilution with more narrow, erratic and discontinued mineralized structures, which is resulting in uneconomic unitary cost per ounce.

## Exploration

Over the years, the Company has actively explored using conventional techniques, such as, stream-sediment and soil sampling, throughout its concessions. Orvana systematically expanded the coverage of prospecting, geochemical and geophysical surveying, trenching, and diamond drilling outward from the core of the Don Mario property to include the Las Tojas project, Don Mario North and Don Mario South,

Cerro Felix and the La Aventura areas. Work was focused on the northern and southern extensions of the Cristal Schist Belt, as defined by results of a regional airborne magnetometer survey. In 2009, over 200 km of dipole-dipole Induced Polarization (IP) surveying was carried out at approximate 250-m line spacing along the length of the Eastern Schist Belt. Drill targets were identified in this program as areas of strong

chargeability response with associated moderate to high apparent resistivity responses. The chargeability component is interpreted as reflecting alteration zone disseminated sulphides, while the high resistivity response is attributed to potential silicification and/or massive calc-silicate alteration.

After the filing of the Don Mario 43-101 Report, the Company identified an outcrop of granite located approximately 500 to 1000 metres west of Don Mario mine, which appears likely to have a gold mineralization in quartz veinlets. Very low soil anomalies and gold values have been identified in soil samples and 1.0 g / t Au in panned concentrate. The Company hopes to find potential in the (señoritas granite) intrusive and in the past has concentrated on the crystal schist same of Don Mario with high grade gold content. Prior to fiscal 2016, some samples were collected in this area which denote a low anomaly in gold and base metals (Pb & Zn). In fiscal 2019, Au soil anomaly was identified 500 to 1000 metres north from the former Las Tojas mine, which appears likely to continue mineralization in shear structure. Trenches in the area reported gold values of up to 2.3 g/t. The LMZ alteration was confirmed, but with no economic mineralization.

## Drilling

### UMZ and LMZ Drilling Program Details

The UMZ has been drilled in seven campaigns since 1991. All programs recovered NQ diameter (47mm) diamond drill core with the exception of six RC holes drilled by La Barca JV in 1991 and La Rosa in 1992. The 123 diamond drill holes have an average length of 78 m and are drilled on section lines oriented 135° and spaced approximately 25 m apart. Approximately 40% of holes are vertical and remaining holes are drilled to the northwest and dip from -80 to -45°. The inclined holes provide high-core angle intercepts with the mineralized body when viewed in section. Thirty-three holes drilled in campaigns targeting the LMZ also intersected UMZ mineralization. These holes have also been used for UMZ mineral resource and reserve estimations.

Drilling programs to define the LMZ were initiated by La Rossa/La Barca Joint Venture in 1991 and were followed up by Billiton through 1995 when the property was purchased by Orvana. All major campaigns recovered NQ size core and were carried out along northeast-southwest oriented section lines that systematically cross the northwest strike of the deposit. Initial drilling was carried out on a more widely spaced basis, but final definition of the deposit prior to mining saw a nominal drill section spacing of 25 m over much of the deposit extent. Most holes are inclined between -45 and -70 degrees and were drilled on-section along southwest azimuths. A few inclined holes were also drilled along northeast azimuths to further test the near-vertical LMZ.

In 2015, a twelve hole program was completed by Orvana on the upper portion of the LMZ, below the UMZ pit, to assess certain areas for void space and to obtain geotechnical information needed for UMZ pit wall pushback scenarios.

### Cerro Felix Deposit Drilling Program Details

Drilling assessment of the Cerro Felix deposit was originally carried out by Billiton in 1995 and consisted of 8 core holes totaling 1,027 m. Drilling was carried out along northeast southwest oriented section lines spaced about 50 m and 100 m apart. In 2006, 25 reverse circulation drill holes were completed totaling 3,471 m and in 2008, Orvana completed a 27-hole core drilling program totaling 3,195 m. In 2015 Orvana completed two additional CF core drilling programs totaling 39 drill holes (3,600 m) at the Cerro Felix deposit and HQ (67 mm) size core was recovered.

### Las Tojas Deposit Drilling Program Details

Drilling assessment of the Las Tojas deposit was originally carried out by Orvana 1996 and between that time and 2008, a total of 110 holes totalling 15,080 m of drilling had been completed. Drilling was carried out along northeast-southwest oriented section lines spaced about 25 and 50 m apart. Orvana completed 133 holes additional totaling 17,628 m of diamond drilling core HQ (67 mm) drill holes at Las Tojas between 2017 and 2019. All holes intersected narrow mineralized zones. Las Tojas deposit is included in the resource estimation work covered by the Don Mario Mine 43-101 Report.



## Sampling, Analysis and Data Verification

### Method

Detailed lithologic logging, geotechnical logging and core sampling area are systematically carried out by site staff and core recovery and geotechnical parameters are calculated for all holes. Clear protocols for core logging and sampling are in place.

Core boxes are brought to an open core logging and storage area and laid out on benches at waist height. Core is washed with water from a gallon paint can and an 8" brush and is marked at one metre intervals on the core and on the core box divider. Geotechnical logging for recovery, rock quality (RQD), fracture spacing (AS), fracture frequency (FF), nature of fracture surface (FS), fracture filling (FF), and degree of weathering (DW) is carried out on a metre by metre basis using well defined parameters and standardized scales and entered on a standardized paper template. Measurements of magnetic susceptibility are taken for each metre of core and recorded in the geotechnical log. Geology staff and helpers log approximately 20 m to 30 m of core per day.

Density determinations have been taken since the initial Billiton drill programs for each metre of core having sufficient recovery to permit collection of a 250 g to 500 g sample. For each metre of coherent core, weights are taken for density determination. A 250 g to 500 g piece of core is collected utilizing pre-existing core breaks where possible. The sample is marked with its depth, and delivered to the balance shack in the core area for weighing. The balance shack is a 1.5 m x 2 m x 3 m area covered with plastic sheeting and with a cardboard door to keep out wind. Samples are weighed on a steel table with a 10 cm x 20 cm hole over an open nominal 50 gallon tank filled with water. A 500 g mechanical, three row balance with 0.01 g precision is used. For each sample lot comprising 15 to 20 samples, the scale is manually equilibrated with a hanging, dry balance tray and then with a hanging, wet balance basket. The baskets hang from the balance through a hole in the table and are immersed in water. Small pieces of wire are hung from the basket to equilibrate it with the dry tray. Samples are weighed and recorded one by one in the geotechnical log using the dry sample tray. The tray is switched with the basket, and the 15 to 20 samples are weighed suspended in water, and weights recorded one by one in the geotechnical log. Core samples are returned to the core boxes.

The procedure for density determinations has not changed over time. However, the above method did not accurately reflect the density for the porous zone mineralization. Therefore, samples from this zone were sent to the ALS Laboratory for wax sealed density determinations.

Geological logging is recorded on a standardized paper logging form with fields for basic drilling information, e.g., hole number, depth, diameter, azimuth, dip, logging geologist, logging dates and logging data for rock codes, alteration, mineralization type and intensity, and general comments. A graphic column is used to capture fracture, joint and contact angles. Logging is to scale with approximately 20 m on a page.

Mineralized core was sampled at the EMIPA core shed at Don Mario Mine. The original core facility was located 100 m north of the mine engineering offices immediately below the LMZ hoist. The core processing facility was not built with the intention to process and store the amount of core being handled by EMIPA in recent years, and in early 2008, EMIPA had established a new core processing facility that included covered racks to better store core and reject materials. Sample intervals were marked by an EMIPA project geologist during geotechnical and geological logging. Intervals were marked at nominal 1.5 m lengths respecting changes in lithology and alteration intensity through the mineralized zone. One to two additional samples were taken above the upper and below the lower margins of the mineralized zone.

Samples were cut following a line marked with a wax pencil such that the dominant foliation is perpendicular to the core axis on the cut surface. One half of the cut core is stored in core boxes now in the new core processing facility at Don Mario Mine; the other half was tagged, put in heavy polyethylene sample bags with two-part waterproof sample tags and shipped to the preparation laboratory.

### Preparation and Analysis

Independent commercial laboratories were consistently accessed to provide drill core preparation and analytical services. This approach has continued to the present with the 2015 Cerro Felix and LMZ drilling programs.

Samples from the beginning of the Orvana drill campaign in 1996 were prepared at the Don Mario preparation facility and sent to the Bondar-Clegg laboratory in Oruro for assay; by the end of the 1996 drill campaign, the Orvana Don Mario laboratory was carrying out fire assays. Assay for acid-soluble copper on selected samples was initiated during the Orvana 1998 drill campaign.

During the 2004 campaign, samples were cut with a rotary diamond carbide saw and prepared and analyzed at Don Mario laboratory. Splits of pulps of 30% of the samples were sent to the Alex Stewart Assayers Argentina laboratory in Mendoza, Argentina for referee analyses.

Core samples from the 2007 campaign were cut and sampled at Don Mario Mine site and sent to the Alex Stewart Assayers Argentina laboratory in Mendoza, Argentina for preparation and analysis. Preparation and analysis processes were similar to those used for the 2004 campaign with the addition of analyses for acid-soluble Zn. A quality control program including the analysis of blanks, a high- and low-grade standard for Au, and pulp duplicates was carried out.

Core samples for the 2015 drill campaign were sent as half core to ALS Global Labs in Oruro for preparation and analysis and were subject to a QAQC program that included analysis of blanks, a high- and low-grade standard for Au, and ¼ core duplicates.

Core samples for the 2017-2019 drill campaigns were sent as half core to ALS Global Labs in Oruro for preparation and analysis and were subject to a QAQC program that included analysis of coarse-and-fine blanks, a high- and low-grade standard for Au, and ¼ core duplicates.

#### Sample Security

Drilling is supervised by EMIPA staff during daytime hours. Access to the drills is limited to contract drill and EMIPA staff. Drill core is transported from the drill to the core shed on the Don Mario property by EMIPA staff and contract drill staff. Drill core is logged, cut, and sampled and bagged by EMIPA staff. Samples are delivered to the Orvana Santa Cruz office in a company truck with staff or contract driver. Samples are shipped from the office in Santa Cruz to Oruro by a private, contracted, trucking firm. ALS and Alex Stewart Assayers Argentina sent an electronic confirmation of receipt to EMIPA staff upon arrival of the samples at the preparation facility.

The relatively small size of the mine and its remote location in a relatively unpopulated region of Bolivia ensure that mine operations maintain a low profile with little public interaction. The mine receives few visitors and security is relatively easy to maintain. The use of reputable contractors and of EMIPA staff for supervision ensures reasonable control over sample security.

#### Data Verification

A Qualified Person(s) as defined under NI 43-101 reviewed the associated drilling database and support data and determined that they were acceptable for use in a mineral resource estimates prepared in accordance with the CIM Standards and disclosed in accordance with NI43-101. Reviews of site drilling operations, core sampling and logging procedures and available quality control and quality assurance program results returned similar determinations.

Gino Zandonai carried out independent desktop data verification checks of drilling database records for the Las Tojas deposit and also for records pertaining to the UMZ stockpile. During the August 2018 site visit, Gino Zandonai (DGCSA) completed site checks similar to those carried out by earlier resource estimate authors. These included a detailed review of core and associated sampling and logging records for mineralized drill holes from the las Tojas deposit and the UMZ oxide stockpile, and verifying and updating the resource.

### **Mineral Resources and Reserves Estimates**

In fiscal 2016, the Company engaged an independent engineering firm, DCGS Exploration and Mining Consulting (“DCGS”), to update the mineral resource and reserve estimates for Don Mario as at September 30, 2016, which was published in the “Technical Report on Done Mario Mine Operation” dated September 30, 2016 by Mr. Gino Zandonai, M.Sc. Mining, CP, Mining Engineer, who is a qualified person independent of the Company for the purposes of NI 43-101, and filed on January 27, 2017 (“Don Mario Mine 43-101 Report”).

Reproduced at “Appendix B - Principal Mineral Projects – Don Mario Mine” is the summary section of the Don Mario Mine 43-101 Report. The full text of the Don Mario Mine 43-101 Report is available for viewing on SEDAR at [www.sedar.com](http://www.sedar.com) and is incorporated by reference in this AIF. Defined terms and abbreviations used herein and not otherwise defined shall have the meanings ascribed to such terms in the Don Mario Mine 43-101 Report.

In fiscal year 2019, the Company engaged Mr. Zandonai, DCGS, an independent mining consulting company, to update mineral reserves and resource estimates for Las Tojas mine, and the stockpile of oxides ores. Updated estimates of mineral resources and reserves for Don Mario mine as of September 30, 2019 were prepared by Mr. Zandonai, an independent Qualified Person under NI 43-101. With respect to the stockpile of oxides, the tonnage reported as a measured resource as of September 30, 2018 was updated to proven reserves as of September 30, 2019 and the total depletion of the Cerro Félix reserve was recorded during fiscal year 2019.

The following tables summarize the estimates of mineral resources in situ for Las Tojas mine, and estimates of mineral reserves for the stockpile of oxides ores:

**In-situ Mineral resources Inclusive of Mineral Reserves  
September 30, 2019  
Las Tojas Deposit**

| <b>Measured</b> |                            |                           |                         |                          |  |                                       |  |
|-----------------|----------------------------|---------------------------|-------------------------|--------------------------|--|---------------------------------------|--|
| <b>Zone</b>     | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/ Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz<br/>Ag)</b> |
| Las Tojas       | 661                        | 1.55                      | 0.11                    | 2.05                     | 33   | 705                                   | 44   |
| <b>Total</b>    | <b>661</b>                 | <b>1.55</b>               | <b>0.11</b>             | <b>2.05</b>              | <b>33</b>                                  | <b>705</b>                            | <b>44</b>                                      |

| <b>Indicated</b> |                            |                           |                         |                          |  |                                       |  |
|------------------|----------------------------|---------------------------|-------------------------|--------------------------|--|---------------------------------------|--|
| <b>Zone</b>      | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/ Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz<br/>Ag)</b> |
| Las Tojas        | 725                        | 1.50                      | 0.11                    | 2.00                     | 35   | 876                                   | 47   |
| <b>Total</b>     | <b>725</b>                 | <b>1.50</b>               | <b>0.11</b>             | <b>2.00</b>              | <b>35</b>                                  | <b>876</b>                            | <b>47</b>                                      |

| <b>Measured + Indicated</b> |                            |                           |                         |                          |  |                                       |  |
|-----------------------------|----------------------------|---------------------------|-------------------------|--------------------------|--|---------------------------------------|--|
| <b>Zone</b>                 | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/ Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz<br/>Ag)</b> |
| Las Tojas                   | 1,386                      | 1.52                      | 0.11                    | 2.02                     | 68   | 1,581                                 | 90   |
| <b>Total</b>                | <b>1,386</b>               | <b>1.52</b>               | <b>0.11</b>             | <b>2.02</b>              | <b>68</b>                                  | <b>1,581</b>                          | <b>90</b>                                      |

| <b>Inferred</b> |                            |                           |                         |                          |  |                                       |  |
|-----------------|----------------------------|---------------------------|-------------------------|--------------------------|--|---------------------------------------|--|
| <b>Zone</b>     | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/ Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz<br/>Ag)</b> |
| Las Tojas       | 241                        | 1.27                      | 0.14                    | 1.79                     | 10   | 337                                   | 14   |
| <b>Total</b>    | <b>241</b>                 | <b>1.27</b>               | <b>0.14</b>             | <b>1.79</b>              | <b>10</b>                                  | <b>337</b>                            | <b>14</b>                                      |

**Notes:**

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Resources are estimated using Gold cut-off grade of 1.0 Au g/t were calculated using operating results for recoveries, and on-site operating costs.
3. Mineral Reserves are estimated using average long-term prices of US\$1,500 per ounce gold, US\$2.50 per lb copper, and US\$17.0 per ounce silver.
4. Numbers may not add due to rounding.
5. All mineral resources have been based on processing by the CIL only.

From the mine, waste material is sent to the waste dump. The inventory of the mineral resources and reserves stockpile estimates of the Company is provided in the tables below.

**Stockpile Mineral Resource (exclusive of in situ)**  
**September 30, 2019**  
**Don Mario**

| <b>Measured</b>            |                            |                           |                         |                               |  |                                       |  |
|----------------------------|----------------------------|---------------------------|-------------------------|-------------------------------|--|---------------------------------------|--|
| <b>Location/Zone</b>       | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t<br/>Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| DM1 (Oxide)                | 492                        | 2.24                      | 1.74                    | 54.44                         | 35.4                                       | 8,560                                 | 861.0                                      |
| DM2 (Oxide Pre-strip)      | 278                        | 1.90                      | 1.98                    | 17.94                         | 17.0                                       | 5,509                                 | 160.5                                      |
| DM3 (Dolomite Oxide)       | 190                        | 1.89                      | 1.96                    | 21.62                         | 11.5                                       | 3,724                                 | 132.1                                      |
| Plant Stockpile (oxide) ** | 515                        | 1.61                      | 1.57                    | 57.82                         | 26.7                                       | 8,108                                 | 958.3                                      |
| DM4 Stock Talco*           | 461                        | 1.65                      | 2.44                    | 64.99                         | 24.5                                       | 11,245                                | 962.8                                      |
| DM5 (dolomite Oxide)       | 202                        | 1.86                      | 1.64                    | 48.66                         | 12.1                                       | 3,314                                 | 316.2                                      |
|                            | <b>2,139</b>               | <b>1.85</b>               | <b>1.89</b>             | <b>49.32</b>                  | <b>127.3</b>                               | <b>40,461</b>                         | <b>3,390.8</b>                             |

**Stockpile Mineral Reserve (exclusive of in situ)**  
**September 30, 2019**  
**Don Mario**

| <b>Proven</b>              |                            |                           |                         |                               |  |                                       |  |
|----------------------------|----------------------------|---------------------------|-------------------------|-------------------------------|--|---------------------------------------|--|
| <b>Location/Zone</b>       | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t<br/>Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| DM1 (Oxide)                | 467                        | 2.24                      | 1.74                    | 54.44                         | 33.7                                       | 8,132                                 | 818.0                                      |
| DM2 (Oxide Pre-strip)      | 264                        | 1.90                      | 1.98                    | 17.94                         | 16.1                                       | 5,233                                 | 152.4                                      |
| DM3 (Dolomite Oxide)       | 181                        | 1.89                      | 1.96                    | 21.62                         | 11.0                                       | 3,538                                 | 125.5                                      |
| Plant Stockpile (oxide) ** | 490                        | 1.61                      | 1.57                    | 57.82                         | 25.4                                       | 7,703                                 | 910.3                                      |
| DM4 Stock Talco*           | 438                        | 1.65                      | 2.44                    | 64.99                         | 23.2                                       | 10,683                                | 914.7                                      |
| DM5 (dolomite Oxide)       | 192                        | 1.86                      | 1.64                    | 48.66                         | 11.5                                       | 3,149                                 | 300.4                                      |
|                            | <b>2,032</b>               | <b>1.85</b>               | <b>1.89</b>             | <b>49.32</b>                  | <b>120.9</b>                               | <b>38,438</b>                         | <b>3,221.3</b>                             |

**Notes:**

1. CIM definitions were followed for Mineral Reserves and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Reserves contained in stockpiles are estimated at a Cu equivalent cut-off grade of 0.85% CuEq.
3. Mineral resources are estimated using a long-term gold price of US\$1,500 per ounce, copper price of US\$2.5 per pound and a silver price of US\$17 per ounce
4. Mineral reserves contained in stockpiles are exclusive of In-situ Mineral Reserves. The UMZ Oxide Stockpile reserves are currently economically viable to process using Acid Leach/Cyanidation Process.
5. Numbers may not add due to rounding
6. All UMZ stockpile were calculated using 95% due to Haulage factor

**Mine Life Extension**

In fiscal 2018, exploration drilling was concentrated around Las Tojas. Las Tojas is a satellite deposit located approximately 12 km northwest of the Don Mario Mine. The Company completed a phase two and phase three drilling program, whereby 64 diamond drill holes (“DDH”) were drilled with a total length of 10,031 metres, 2,746 samples were collected, and three zones with significant mineralization along 2.8 km were identified.

As at September 30, 2019, EMIPA had oxides stockpile resources (Measured) of approximately 2.18 million tonnes with an average gold grade of 1.85 g/t. The initial stockpile resource was estimated in the Don Mario Mine 43-101 Report dated January 27, 2017 and effective as of September 30, 2016 on the assumption that the stockpile would be processed by flotation and would not be included in the carbon-in-leach circuit. However, during FY2018 and FY2019, the Company has been evaluating metallurgical alternatives to process the oxides stockpile, concluding that a sulphidization circuit would maximize the value of the stockpile. Mineral resources that are not mineral reserves do not have demonstrated economic viability. The mineral resource for the oxides stockpile was prepared in compliance with National Instrument 43-101 and CIM guidelines, as set out in the Don Mario Mine 43-101 Report. A copy of the Don Mario Mine 43-101 Report is posted under the Company’s profile on [www.sedar.com](http://www.sedar.com). These mineral resources were estimated using a gold price of US\$1,300 per ounce, copper price of US\$3.00 per pound and silver price of US\$18 per ounce, prices of which were used in the Don Mario Mine 43-101 Report.

The Company anticipates that, subject to the favorable completion of technical, economic and funding analysis, the sulphidization circuit and ancillary facilities will be in full production by FY2021 to process the oxides stockpile.

As of September 30, 2019, the Company has also commenced an evaluation of re-processing tailings to determine the viability of recovering gold from material deposited in the tailings impoundment since the commencement of production at Don Mario.

Additional information on Don Mario Mine is provided below in “Appendix B - Principal Mineral Projects - Don Mario Mine”.

**Outlook**

The Company continues to pursue its objectives of optimizing production, lowering unitary cash costs, maximizing free cash flow, and extending the life-of-mine of its operations.

At OroValle, the primary objective for fiscal 2020 is to continue lowering unitary costs, while maintaining production stable at the level realized in fiscal 2019. Several productivity initiatives are in progress, including the following: revaluation of the backfill process, reduction of power consumption through different initiatives at the plant and the mine, and fleet use optimization to reduce costs. Ongoing brownfield and infill drilling in and around the El Valle and Carlés mines is expected to continue strong conversion of resources into reserves and adding new resources to the ore bodies extending the current mine life.

At EMIPA, in the first quarter of fiscal 2020, the Company made the decision to suspend mining operations at Las Tojas effective on or before December 31, 2019. Notwithstanding the suspension of mining operations, the development and engineering of the oxides stockpile that has accumulated from past mining activities at Don Mario (the “Oxides Stockpile Project”) continues to advance. The Company anticipates that, subject to the favourable completion of technical, economic and funding analysis, the sulphidization circuit and ancillary facilities will be in full production by FY2021 to process the oxides stockpile. During this one-year interim period, contractors will be developing the Oxide Stockpile Project at site, while undertaking care and maintenance of existing facilities.

At Taguas, the primary objective for the first quarter of fiscal 2020 is the completion of the corporate structure to hold the property and closing the acquisition (including the rights transfer registration and the TSX final acceptance). Subject to closing the transaction and securing the required financing, the Company is preparing a drilling program in order to potentially expand the current resources and to support the potential upgrade in Mineral Resource estimates.

The following table sets out Orvana's fiscal 2019 results and guidance as well as its fiscal 2020 production and cost guidance:

|   | <b>FY 2019<br/>Guidance <sup>(1)</sup></b> | <b>FY 2019<br/>Actual</b> | <b>FY 2020<br/>Guidance <sup>(2)</sup></b> |
|---|--|---------------------------|--|
| <b>El Valle Production</b>  |  |                           |  |
| Gold (oz)   | 62,000 – 68,000                            | 64,327                    | 60,000 – 65,000                            |
| Copper (million lbs)  | 3.2 – 3.6                                  | 5.0                       | 5.5 – 6.0                                  |
| <b>Don Mario Production</b>   |  |                           |  |
| Gold (oz)   | 38,000 – 42,000                            | 32,932                    | 2,000 – 3,000                              |
| <b>Total Production</b>   |  |                           |  |
| Gold (oz)   | 100,000 – 110,000                          | 97,259                    | 62,000 – 68,000                            |
| Copper (million lbs)  | 3.2 – 3.6                                  | 5.0                       | 5.5 – 6.0                                  |
| <b>Capital Expenditures</b>   |  |                           |  |
| El Valle  |  | \$8,333                   | \$9,000 – \$10,000                         |
| Consolidated  | \$12,000 – \$13,500                        | \$11,261                  | \$9,000 – \$10,000                         |
| <b>Cash operating costs (by-product)<br/>(\$/oz) gold <sup>(1) (2)(3)</sup></b> |  |                           |  |
| El Valle  |  | \$1,004                   | \$900– \$1,000                             |
| Consolidated  | \$950 – \$1,050                            | \$1,094                   | \$1,000– \$1,100                           |
| <b>All-in sustaining costs (by-product)<br/>(\$/oz) gold <sup>(1) (2)</sup></b> |  |                           |  |
| El Valle  |  | \$1,185                   | \$1,100– \$1,200                           |
| Consolidated  | \$1,150 – \$1,250                          | \$1,253                   | \$1,250– \$1,350                           |

(1) Fiscal 2019 Guidance assumptions for COC and AISC include by-product commodity prices of \$2.75 per pound of copper and an average Euro to US Dollar exchange of 1.16.

(2) Fiscal 2020 guidance assumptions for COC and AISC include by-product commodity prices of \$2.60 per pound of copper and an average Euro to US Dollar exchange of 1.12.

## Revenue

The Company has the following material off-take agreements for the sale of the products produced at El Valle Mine and Don Mario Mine:

- In March 2011, the Company entered into a contract with a metals trader in Zug, Switzerland for the sale of the gold-copper-silver concentrates produced from El Valle Mine. The Company believes that, due to the availability of alternative purchasers, no material adverse effect would result if such off-taker was unable to purchase the gold-copper-silver concentrates from El Valle Mine.
- In August 2016, the Company entered into the Prepayment Facility, thereby entering into an agreement with the Financier for the refining and sale of gold doré from El Valle Mine commencing in October 2016. The Company terminated its previous doré refining contract with a refiner in Marin, Switzerland and previous doré sales contract with a metals trader for the refining and sale of gold doré from El Valle Mine, both effective October 2016. The Company believes that, due to the availability of alternative purchasers and refiners, no material adverse effect would result if the Financier was unable to purchase and process, respectively, the gold doré from El Valle Mine.

- In August 2016, the Company entered into the Prepayment Facility, thereby entering into a term agreement with the Financier for the sale of copper concentrates produced from Don Mario. The Company believes that, due to the availability of alternative purchasers, no material adverse effect would result if the Financier was unable to purchase the copper concentrate from Don Mario Mine.
- In March 2017, the Company entered into a gold refining agreement with a refiner in Ottawa, Canada and a sales contract with a metals trader for the sale of gold-silver doré from Don Mario. The Company believes that, due to the availability of alternative purchasers, no material adverse effect would result if such off-taker was unable to purchase the gold-silver doré from Don Mario.

Compared to fiscal 2018, revenue for fiscal 2019 decreased by \$10.3 million or 7% to \$135.5 million from sales of 96,540 ounces of gold and 5.0 million pounds of copper, compared with revenue of \$145.8 million from sales of 102,018 ounces of gold and 8.7 million pounds of copper. The decrease in revenue was primarily due to lower gold sales volume and lower copper sales volume, partially off-set by higher realized gold price.

Compared to fiscal 2017, revenue for fiscal 2018 increased by \$7.8 million or 6% to \$145.8 million from sales of 102,018 ounces of gold and 8.7 million pounds of copper, compared with revenue of \$138 million from sales of 88,636 ounces of gold and 14.7 million pounds of copper for fiscal 2017. The increase in revenue was primarily due to higher gold sales volume and realized metal prices, partially offset by lower copper sales volume.

Compared to fiscal 2016, revenue for fiscal 2017 increased by \$44.1 million or 47% to \$138.0 million from sales of 88,636 ounces of gold, 14.7 million pounds of copper and 362,827 ounces of silver from El Valle and Don Mario compared with revenue of \$93.9 million from sales of 61,816 ounces of gold, 13.4 million pounds of copper and 469,847 ounces of silver in fiscal 2016. The increase in revenue was primarily due to higher gold and copper sales volumes and higher realized metal prices.

## Employees

As of September 30, 2019, Orvana and its subsidiaries employed a total of 710 full-time employees and 303 contract personnel for a total of 1,005 as follows: (i) 221 employees and 201 contractors providing mine, mill, camp and support services at Don Mario Mine; (ii) 487 employees and 93 contractors providing mine, mill and support services at El Valle Mine; and (iii) two employees and one contractor (of whom is the Chief Executive Officer of Orvana) at the Company's head office in Toronto, Canada. The Company employs a number of personnel who are experienced in open-pit and underground mining techniques as well as polymetallic mineral processing. The Company has skilled professionals in all the required technical and financial areas but will supplement with specialized consultants as required. Although the Company's business requires personnel with specialized skills, the Company believes that persons having the necessary skills are generally available.

## Health, Safety, Environment and Social Practices

The board of directors of the Company has a Safety, Environment and Technical Committee. The purpose of this committee is to provide support and oversight for the Company's safety, health, environmental and sustainability programs, and to assist in reviewing the technical, safety, health, environmental and sustainability performance of the Company.

Orvana maintains various industry standard metrics to track its safety and health performance over time such as lost-time injury frequency rates and lost-time injury severity rates as well as environmental performance.

### Health and Safety

The Company maintains health and workplace safety programs at each of its operations. In order to ensure that safety goals and optimal safety standards are achieved, comprehensive training programs for personnel take place on an ongoing basis. Regular operations inspections are performed by representatives from the mine operations, planning and safety departments as well as by regulatory authorities and independent third-party experts. These inspections review current conditions and trigger action on potential safety issues that arise as mine development progresses. The Company has also hired service providers to support the Company's safety department in risk assessment, training and work environment monitoring.

## Environmental

Orvana is committed to developing and operating its mines and projects, including reclamation efforts, in full compliance with local environmental regulations and recognized international environmental standards. In furtherance of this commitment, Orvana regularly implements programs to protect and enhance natural habitats and sensitive species, including reclamation and reforestation efforts and the establishment of water sources for wildlife. The Company monitors the water and air quality on a frequent basis at El Valle and Don Mario and these operations are also periodically inspected by environmental regulatory authorities. Third parties sample and analyze both surface and ground water following protocols established by the applicable regulatory authorities in order to provide the necessary information. Any regulated elements whose values are not in compliance in the subject jurisdictions, when detected, are evaluated.

Where the levels of certain regulated elements potentially exceed permitted levels, evaluations have been provided to the appropriate regulatory authorities and remedial actions have been sought out, evaluated and, where warranted in the circumstances, implemented. OroValle is currently working through one such matter involving selenium discharges into the Cauxa River in Asturias, Spain, in respect of which it has received and may receive additional monetary sanctions and is subject to a criminal investigation. The Cauxa River flows past El Valle Mine operated by the Company's Spanish subsidiary, OroValle, as well as certain other mining properties owned by third parties. Selenium is a naturally occurring element that is found in rocks, land and water and thus is also naturally found in certain food supplies. The maximum content level for selenium has been set (i) in drinking water at 50 micrograms per liter ("µg/L") by Health Canada and the Environmental Protection Agency in the United States (the "EPA") and (ii) in surface water with fish based on selenium levels in fish tissue and in lotic surface water without fish at 3.1 µg/L by the EPA. In 2011, Spain set the limit of selenium in inland surface water at 1 µg/L and in other surface water and drinking water at 10 µg/L. The Company believes that, based on recent scientific studies conducted by the Company under international standards, the levels of selenium in Cauxa River are not a health or environmental risk.

Spanish Water Authorities have taken the position that the levels of selenium in the river flowing past the El Valle Mine exceed the levels permitted by applicable regulations as a result of discharges attributed to OroValle which may not be in compliance with certain of OroValle's permits. In recent years, OroValle has received approximately €1.0 million (approximately \$1.1 million) in fines relating to these matters and may face further additional fines or other sanctions, including the revocation or suspension of certain permits, in the future. OroValle is appealing the outstanding fine and the enforcement of certain fines has been suspended pending the related criminal matter. A judge of the criminal court of Asturias is conducting an investigation into the potential commission by OroValle of a reckless crime under the Spanish penal code relating to these matters. The judge may decide to dismiss the matter, conduct a further investigation and/or charge OroValle/Orvana, or both. If the Company is ultimately found responsible, monetary penalties, amongst other sanctions, may be applied. These sanctions could have a material impact on the Company. At this time, the Company has not been charged. OroValle has cooperated and will continue to cooperate with investigations and is defending itself vigorously. OroValle has been working to remediate this matter through various activities including the implementation of a reverse osmosis water treatment plant in September 2014 and the development of a long-term water management plan, which is in progress. While it appears that these remediation efforts are addressing these matters, there can be no assurances that OroValle's continuing remediation activities will successfully achieve full compliance with local regulations. In addition, OroValle has been seeking to either amend certain of its permits or, alternatively, to receive new permits, and to receive extensions of deadlines to comply with local requirements. Orvana is committed to developing and operating its mines and projects in full compliance with local environmental regulations and recognized international environmental standards.

The Company must dispose, in a safe manner, of the tailings that part of the crushed rock leaves after the metals are extracted. This is typically done in an impoundment area that not only contains this material and waste water, but provides a contingency for extraordinary seismic and weather events so that this material remains contained. El Valle Mine must provide bonds to ensure that the impacted areas are remediated. Total cash deposited with Spanish financial institutions for reclamation bonds including in respect of the tailings impoundment area amounted to approximately \$8 million at September 30, 2019 and these monies are expected to be released after all reclamation work at El Valle has been completed. Spanish regulatory authorities have demanded that an additional reclamation bond of €5.0 million be deposited by the Company under Spanish mining regulations in respect of El Valle. The Company is challenging the requirement to fund the additional reclamation bond through an administrative appeal process. The Company is also working with the Spanish regulatory authorities to come to an agreement regarding posting the bond, including the consideration of alternatives to posting this bond, while preserving the Company's rights during the appeal process. The costs incurred by the Company in



connection with environmental monitoring and maintenance related to environmental matters are generally treated as ordinary operating expenses.

## **Sustainability**

Orvana is committed to the social development and well-being of the communities in which it operates. To this end, in addition to the payment of income taxes and other local community taxes such as land moving taxes, Orvana continues to support, financially and otherwise, local community endeavors associated with these objectives. In fiscal 2019, Orvana corporate leaders continued to be active in visiting and participating in sustainability initiatives in Spain and Bolivia. The Company has supported the communities surrounding El Valle by donating funds to local museums and funding the re-stocking of fish species into local rivers. Additionally, OroValle has continued its commitment to support cultural activities, including organizing the celebration of Santa Barbara Day, patron of Miners, sponsoring different Belmonte events and celebrations; collaborating with an archeological investigation in the Boinás area; supporting the Salas Salmon Fair and championship; supporting the Gold Panning Championship in Navelgas; and, for the second time, sponsoring Belmonte Marathon, which counted with more than 70 workers of OroValle and relatives running it.

In the Chiquitos Province of Bolivia where the Don Mario Mine is located, the Company is actively involved in working with communities to contribute to the improvement of their standard of living. In 2011, Orvana renewed its support of investing \$1.8 million in the local communities over a five-year period. Projects supported by Orvana include supervision of and financial support for community development projects such as utilities and parks, education and information technology, cultural events and sporting initiatives, community business development initiatives, agricultural projects and maintenance of community roads. Projects were jointly monitored by the Company and community boards and funds were disbursed in accordance with the plan for the five-year period. In fiscal 2016, the Company entered into two agreements to fund a total of \$0.3 million to community projects. One of the agreements was with the San José local government to support development projects, such as improvements in educational facilities and in a women's shelter, and the other agreement was with East Turubó communities to assist with projects related to an indigenous development plan. All projects are reviewed and approved by the Company and funds are disbursed based on project progress. In fiscal 2017, the Company proposed to the San José local government and East Turubó communities to develop projects together that are focused on health, education and sanitation (garbage management system), given that, based on international experience, these types of projects have a direct and positive impact on communities. The Company also proposed to use other sources of available funds for these types of projects. In fiscal 2018, the Company, as part of its vision of focusing on health, education and sanitation, supported projects directly related to those areas (new school classrooms, education programs base on local classical music) in coordination with San José local government and proposed a five years agreement to East Turubó communities. In 2019, nine projects were executed in coordination with the San José de Chiquitos Municipality. These projects are related to education (3), sanitation (3) and health (3). One of the projects of sanitation is related to the provision of water to the community of San Juan. These project were executed in the same city of San José as well as in all five communities of the TCO –T (Tierras Originarias de Origen – Turubó).

## **Foreign Operations**

The Company's principal mineral projects are the El Valle Mine in Spain and the Don Mario Mine in Bolivia. The head office of Orvana is located in Toronto, Canada. Consequently, the Company is substantially dependent on its foreign operations.

## RISK FACTORS

The following discussion summarizes the principal risk factors that apply to the Company's business and that may have a material adverse effect on the Company's business, financial condition and results of operations, or the trading price of the Common Shares. Enterprise risk management is carried out by management of the Company under policies approved by the board of directors thereof. Management of the Company identifies and evaluates risks in co-operation with the Company's operating units. The board of directors of the Company reviews the risk management programs and provides oversight on specific areas. The Company's overall risk management program seeks to minimize potential adverse effects on the Company's financial and operating performance.

The Company's activities expose it to a variety of financial risks, market risks (including commodity price risks, currency risks and interest rate risks), credit risks, liquidity risks, financing risks and other risks. Orvana's business is subject to certain other risks in operational, strategic and regulatory areas. In managing risk, management of the Company focuses on the risk factors that impact the ability of the Company to operate in a safe, profitable and responsible manner.

### Financial Risks

#### Currency Risk

Currency fluctuations may affect the costs Orvana incurs at its operations and may affect Orvana's operating results and cash flows. Orvana's functional currency is the US dollar. The Company operates internationally and is exposed to foreign exchange risk arising from various currency exposures, primarily with respect to the US dollar and the Euro. Orvana earns its revenue in US dollars. In respect of El Valle Mine, Orvana incurs most of its operating costs and capital expenditures in Euros, the value of which has varied against the US dollar since El Valle Mine commenced operations in 2011. Appreciation of certain non-US dollar currencies such as the Euro against the US dollar would increase the costs of production, making Orvana's mines less profitable. In respect of Don Mario, Orvana incurs most of its operating costs and capital expenditures in Bolivianos, the exchange rate for which has not varied materially against the US dollar in recent years, although inflation has been decreasing in Bolivia over the past three years.

#### Commodity Price Risks

The Company's business, its ability to generate positive cash flows and the value of the Company's mineral properties are heavily influenced by metal prices, particularly the prices of gold, copper and silver, as well as the cost and availability of commodities which are consumed or otherwise used in connection with Orvana's operations, including, fuel and electricity. If the world market price of gold, copper or silver were to drop and the prices realized by Orvana on gold, copper or silver sales were to decrease significantly and remain at such a level for any substantial period, Orvana's profitability and cash flow would be further adversely affected. An increase in worldwide demand for other critical resources such as input commodities, drilling equipment, tires and skilled labor may cause unanticipated cost increases and delays in delivery times, thereby impacting the Company's operating costs, capital expenditures and production schedules. Delays in delivery times may also occur as a result of lower supplies and materials in stock following the recent downturn in commodities.

Prices of metals and other commodities can and do change significantly over short periods of time and are affected by numerous factors beyond the control of the Company, including changes in the level of supply and demand, international economic and political trends, expectations of inflation, currency exchange fluctuations including the strength of the US dollar, interest rates, global or regional consumption patterns, speculative activities and increased production arising from improved methods and new discoveries. There can be no assurance that prices at which the Company can sell the mineral products it produces will be sufficient to ensure that the Company's properties can be mined profitably. A sustained or significant further decline in the price of gold, copper or silver would have adverse effects on the profitability of the Company and would negatively impact cash flows. To facilitate the management of certain of its price risk, the Company has hedged a portion of its gold and copper production.

The Company has no outstanding derivative instruments at September 30, 2019. The Company paid net cash of \$856,000 in settlement of the derivative instruments that matured in the period.

Management used a long-term price per ounce of gold of between \$1,500 to \$1,543 to perform its impairment assessments for OroValle and EMIPA as at September 30, 2019. A 5% decrease in price per ounce would have resulted in no impairment at OroValle or EMIPA. The 5% decrease in gold price was not modeled with a corresponding depreciation in EUR.

Management used long-term Euro/USD exchange rates between 1/1.20 to 1/1.25 to perform its impairment assessments for OroValle as at September 30, 2019. A 5% depreciation of the annual Euro/USD exchange rates would have resulted in no impairment at OroValle or EMIPA. The 5% depreciation in Euro/USD exchange rates was not modeled with a corresponding increase in gold price.

## Use of Derivatives

As described in the section of this AIF headed “Risk Factors - Financial Risks – Commodity Price Risks,” Orvana has undertaken certain hedging activities to manage the risks associated with gold or copper price volatility and may undertake additional hedging activities and use certain derivative products solely for the purpose of managing the risks associated with gold or copper price volatility, changes in other commodity input prices, interest rates, foreign currency exchange rates and energy prices. The use of derivative instruments involves certain inherent risks including: (i) credit risk - the risk that the creditworthiness of a counterparty may adversely affect its ability to perform its payment and other obligations under its agreement with Orvana or adversely affect the financial and other terms the counterparty is able to offer to Orvana; (ii) market liquidity risk – the risk that Orvana has entered into a derivative position that cannot be closed out quickly, by either liquidating such derivative instrument or by establishing an offsetting position; and (iii) unrealized mark-to-market risk – the risk that, in respect of certain derivative products, an adverse change in market prices for commodities, currencies or interest rates will result in Orvana incurring an unrealized mark-to-market loss in respect of such derivative products. There can be no assurance that Orvana will undertake any further hedging activities or continue current hedging activities.

## Credit Risk

The Company’s credit risk is primarily attributable to gold, copper and silver concentrate and gold doré sales and value-added tax receivables. The Company has a concentration of credit risk with three customers to which gold, copper and silver concentrate and gold doré are sold under agreements and who provide provisional payments to the Company upon each product shipment. Value-added taxes refundable or otherwise recoverable are collected from the Bolivian and Spanish governments, in accordance with applicable local laws, rules and procedures.

## Liquidity and Financing Risks

Liquidity risk represents the risk that the Company will not be able to meet its financial obligations as they fall due. Financing risk represents the risk that, if unanticipated events occur that may impact the operations of El Valle and Don Mario and/or if the Company does not have adequate access to additional financing on terms acceptable to the Company, the Company may not have adequate resources to maintain its operations or advance its projects as currently anticipated. Cash flows forecasting is performed in the operating entities of the Company and aggregated at the Orvana corporate level. Management monitors these rolling forecasts to ensure the Company has sufficient cash to meet its financial obligations and operational needs at all times.

As at September 30, 2019, the Company’s outstanding debt includes the \$2.8 million El Valle Revolving Facilities, \$7.5 million BISA TSF Loan Heavy equipment loan and Revolving Facility, \$0.5 million Banco de Crédito Loan, \$7.3 million New Facility – Spanish local banks and \$0.4 million Bankinter Loan. See “Development of the Business – El Valle Revolving Facilities”, “Development of the Business - BISA TSF Loan, Heavy equipment Loan and Revolving Facility” and “Development of the Business - Prepayment Facility”.

Orvana may assume additional debt in future periods or reduce its holdings of cash and cash equivalents in connection with funding future acquisitions, existing operations, capital expenditures, dividends or in pursuing other business opportunities.

If unanticipated events occur that adversely impact the operations of El Valle and Don Mario and/or if the Company does not have adequate access to financing on terms acceptable to the Company, the Company may not have adequate resources to maintain its operations or advance its projects as currently anticipated. In such circumstances, the Company may need to take additional measures to increase its liquidity and capital resources, including obtaining additional debt or equity financing, strategically disposing of assets or pursuing joint-venture partnerships, equipment financings or other receivables financing arrangements. The Company may experience difficulty in obtaining satisfactory financing terms or adequate project financing. Failure to obtain adequate financing on satisfactory terms could have a material adverse effect on Orvana's results of operations or financial condition.

### **Internal Control Environment**

Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Disclosure controls and procedures are designed to ensure that information required to be disclosed by a company in reports filed with securities regulatory agencies is recorded, processed, summarized and reported on a timely basis and is accumulated and communicated to a company's management, including its chief executive officer and chief financial officer, as appropriate, to allow timely decisions regarding required disclosure. Orvana has invested resources to document and analyze its system of disclosure controls and its internal control over financial reporting. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance with respect to the reliability of financial reporting and financial statement preparation.

### **Global Economic Issues**

Global financial and economic conditions have been characterized by extreme volatility in recent years, including commodity-price fluctuations and the cost of debt and equity securities. Access to public and private debt and equity financing has been negatively impacted during this time. If such conditions persist or worsen, they could negatively impact the ability of the Company to obtain additional debt or equity financing in the future and, if obtained, on terms favourable to the Company. Additionally, global economic conditions may cause decreases in asset values that are deemed to be other than temporary, which may result in impairment losses. Changes in global economic conditions may also lead to significant changes in commodity prices. If these conditions and volatility persist or worsen, the Company's business, results of operations and financial condition could be adversely impacted and the value and price of the Company's Common Shares could be adversely affected.

## **Operational, Strategic and Regulatory Risks**

### **Mineral Resources and Reserves Estimates and Replacement of Depleted Reserves**

Mineral resources and reserves provided by the Company are estimates and no assurances can be given that such estimated mineral resources and reserves are accurate or that the indicated level of minerals will be mined, milled or otherwise produced. Such estimates are, in part, based on interpretations of geological data obtained from drill holes and other sampling techniques. Actual mineralization or formations may be different from those predicted. Market price fluctuations of gold, copper and silver, as well as increased production, capital costs or reduced recovery rates, may result in Orvana's mineral resources and reserves becoming unprofitable to develop for periods of time or may render uneconomic certain mineral reserves containing relatively lower grade mineralization.

In addition, short term operating factors relating to mineral reserve estimates such as the need for the orderly development of orebodies, the processing of new or different ore grades, the technical complexity of ore bodies, unusual or unexpected ore body formations or ground conditions, ore dilution or varying metallurgical and other ore characteristics may cause mineral reserves to be reduced or Orvana to be unprofitable in any particular accounting period. Estimated mineral resources and reserves may have to be recalculated based on actual production experience and costs and/or the prevailing prices of the metals produced. Failure to obtain or maintain necessary permits or government approvals or changes to applicable laws or regulations could also cause Orvana to reduce its mineral reserves estimates. Any of these factors may require Orvana to reduce its mineral reserves and resources, which could have a negative impact on Orvana's financial results. Orvana's current life-of-mine plans are based on the mineral reserves estimates set out in this AIF. Changes in factors such as those noted above may result in changes in mine plans which could cause a reduction in mineral reserves.

Orvana's mineral reserves must be replaced to maintain production levels over the long term. Reserves can be replaced by expanding known orebodies, locating new deposits or making acquisitions. Exploration is highly speculative in nature. Exploration projects involve many risks and are frequently unsuccessful. Once a site with mineralization is discovered, it may take several years from the initial phases of drilling until production is possible, during which time the economic feasibility of production may change. Substantial expenditures are required to establish proven and probable reserves and to construct mining and processing facilities. As a result, there is no assurance that current or future exploration programs will be successful.

Depletion of reserves may not be offset by discoveries or acquisitions and divestitures of assets could lead to a lower reserve base. Reserves calculated in accordance with NI 43-101 may also decrease due to economic factors such as the use of a lower metal price assumption. The mineral base of Orvana will decline if reserves are mined without adequate replacement and Orvana may not be able to sustain production to or beyond the currently contemplated mine lives, based on current production rates.

### **Production Estimates**

No assurance can be given that production estimates will be achieved. The Company's actual production volumes and production costs may vary from estimates for a variety of reasons including: attributes of the material mined varying from those used in estimations of grade, tonnage, dilution and metallurgical and other characteristics; short-term operating factors relating to mineral resources, such as the need for orderly development of ore bodies or the processing of new or different grades; the inability to replicate small-scale laboratory tests under production scale conditions; fluctuations in the sales price of products or the availability of suppliers; risks and hazards associated with mining; inclement weather conditions; natural disasters, including floods, drought and earthquakes; unexpected labour shortages or disruptions; unanticipated technical issues or shutdowns; technical complexity in connection with mining or expansion activities; unusual or unexpected geological formations; shortages or interruptions in the supply of, and the price of, natural gas, water, fuel and other mining inputs, including critical parts or equipment; sequencing or processing challenges resulting in lower than expected recovery rates; and permitting regulations and requirements.

### **Development, Capital Projects and Operation of Mines**

Mine development and operations involve considerable risks including technical, financial, legal and permitting. Substantial expenditures are usually required to establish mineral reserves and resources estimates, to evaluate metallurgical processes and to construct and commission mining and processing facilities at a particular site. Currently, the Company's revenue stream depends on production from the El Valle Mine and Cerro Felix at Don Mario. These projects do not have extensive operating histories upon which to base estimates of future cash flow or extensive mine lives. It is not unusual in the mining industry for mining operations to experience unexpected problems following commencement of commercial production, resulting in delays and requiring more capital than anticipated. Actual costs and economic returns may differ materially from the Company's estimates. Risks associated with the operation of mines include, without limitation: unusual or unexpected geological formations; unstable ground conditions that could result in cave-ins or landslides; floods; power outages; shortages, restrictions or interruptions in supply of natural gas, cyanide, sulphur, iron sponge, lime, water or fuel; labour disruptions; social unrest in adjacent areas; equipment failure; fires; explosions; failure of tailings impoundment facilities; the inability to obtain suitable or adequate machinery, equipment or labour; and the near term ability to successfully transition operations in Don Mario, from open pit to processing stockpiles and tailings. Any of these risks could have a material adverse effect on the Company's results of operations or financial condition.

## **Infrastructure**

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

## **Competition**

The Company faces considerable competition in acquiring promising mineral claims, mineral leases, exploration properties or other mining assets, access to water, power and other required infrastructure, engaging joint venture partners and obtaining funding support. As a result of this competition, some of which is against companies with substantial capabilities and greater financial and technical resources than Orvana, the Company's costs of such acquisitions may increase or Orvana may be unable to acquire mineral properties, engage joint venture partners or obtain funding on terms it considers acceptable. Orvana also competes with other mining companies to attract and retain key executives and employees. There can be no assurance that Orvana may be able to compete successfully with its competitors in acquiring properties, assets or access to infrastructure or in attracting and retaining skilled and experienced employees.

## **Acquisitions and Divestitures**

From time to time, Orvana examines opportunities to acquire additional mining assets and businesses or divest business units. Any acquisition or divestiture that Orvana may choose to complete may be of significant size, may change the scale of Orvana's business and operations, and may expose Orvana to new or greater geographic, political, operating, financial, legal and geological risks. Orvana's success in its acquisition activities depends on its ability to identify suitable acquisition candidates, negotiate acceptable terms for any such acquisition, and integrate the acquired operations successfully with those of Orvana. Any acquisitions would be accompanied by risks. For example, there may be a significant change in commodity prices after Orvana completes an acquisition or divestiture and established a purchase price or exchange ratio; a material orebody may prove to be below expectations; Orvana may have difficulty integrating and assimilating the operations and personnel of acquired companies, realizing synergies and maximizing the financial and strategic position of the combined enterprise and maintaining uniform standards, policies and controls across the organization; the integration or divestiture may disrupt Orvana's ongoing business and its relationships with employees, customers, suppliers and contractors; and an acquired business or assets may have unknown liabilities which may be significant.

In the event that Orvana chooses to raise debt capital to finance any such acquisition, Orvana's leverage will be increased. If Orvana chooses to use equity as consideration for such acquisition, existing shareholders may suffer dilution. In addition, many companies in the mining industry have seen significant downward pressure on their equity values after announcing significant acquisitions. There is a risk that if Orvana were to announce a significant acquisition, the value of the Common Shares could decrease over the short, medium and/or long term. There can be no assurance that Orvana would be successful in overcoming these risks or any other problems encountered in connection with such acquisitions.

## **Title Matters**

The Company's interests in mineral tenures grant it rights to the minerals discovered in the course of exploration. Obtaining and maintaining property and mineral rights is subject to ongoing compliance with the laws and regulations promulgated with respect to such rights by Orvana. While the Company believes that its title to each of its properties, mineral claims and concessions is generally in good standing, the Company's title to any of such properties, claims and concessions can be uncertain, may be contested and is not guaranteed. The Company's title to any of its properties, mineral claims and concessions may be challenged or impugned and properties, claims and concessions may be subject to prior unregistered agreements or transfers, or local land claims, and title may be affected by undetected defects.

## Water Supply

The amount of ore processed at Don Mario is dependent on the volume of water available in nearby reservoirs, which depends on the amount and timing of seasonal rainfall. If a sufficient amount of water is not accumulated and maintained, Don Mario may not be able to operate at full capacity or may be able to do so only on an intermittent basis. El Valle is a no-discharge facility as process water is discharged into the tailings impoundment and sent back to the plant. If there is a water deficit in this closed system, the Company can use mine water to make up that deficit.

## Regulatory and Other Risks

The Company is operating El Valle in Spain and Don Mario in Bolivia. As a result, the Company is subject to the laws and governmental regulations in those countries as well as those in Canada and in any other country in which it may develop operations. Changes to such laws or governmental regulations could have a material adverse effect on the Company's ability to obtain and maintain compliance with permits and licenses necessary to operate which could have a material adverse effect on Orvana's results of operations, liquidity or financial condition. Such changes could include changes in respect of: income taxes or royalties; environmental matters; license and permit requirements; human rights matters; repatriation of profits; export controls; restrictions on production; expropriation or nationalization of property; limitations on foreign ownership; and changes in governments or other intervention of governments or other political or economic developments in the jurisdictions in which Orvana carries or may carry on business in the future.

The applicable anti-corruption and anti-bribery laws generally prohibit companies and their intermediaries from making improper payments for the purpose of obtaining or retaining business or other commercial advantage and require the reporting of certain government payments. Orvana's policies mandate compliance with such laws, which can give rise to substantial penalties or other consequences. Orvana operates in jurisdictions that have experienced governmental and private sector corruption to some degree, and, in certain circumstances, strict compliance with anti-bribery laws may conflict with certain local customs and practices. There can be no assurance that Orvana's internal control policies and procedures always will protect it from reckless or other inappropriate acts committed by the Company's affiliates, employees or agents. Violations of these laws, or allegations of such violations, could result in regulatory breaches, fines, temporary shut-down or suspension of operations, litigation or other administrative proceedings which could have a material adverse effect on Orvana's business, financial position and results of operations.

In Canada, the Extractive Sector Transparency Measures Act ("ESTMA"), a federal regime for the mandatory reporting of payments to government, came into force on June 1, 2015. ESTMA introduces new reporting and transparency obligations for the Canadian extractive sector, containing broad reporting obligations with respect to payments to governments and state owned entities worldwide. A failure to comply with ESTMA could result in significant monetary liability for the Company and its directors and officers. While Orvana has put in place processes to comply with ESTMA, there can be no guarantee that such processes will eliminate the risk of a failure to comply with ESTMA.

## Permits

Orvana's mining and processing operations and development and exploration activities are subject to extensive permitting requirements. Failure to obtain required permits and/or to maintain compliance with permits once obtained could result in injunctions, fines, suspension or revocation of permits and other penalties. While Orvana strives to obtain and comply with all of its required permits, there can be no assurance that Orvana will obtain all such permits and/or achieve or maintain full compliance with such permits at all times.

The Company is working through such permitting issues at El Valle Mine in Spain. Spanish regulatory authorities have taken the position that OroValle is not complying with all conditions of certain permits, including the discharge level of selenium and the posting of additional reclamation bonds. OroValle is working with Spanish regulatory authorities to develop a solution for compliance. OroValle is also appealing these permit conditions in courts. There can be no assurances that these actions will be successful in changing Spanish regulatory authorities' position on OroValle's permit compliance. See "Health, Safety, Environment and Social Practices - Environment" above.

Activities required to obtain and/or achieve or maintain full compliance with such permits can be costly and involve extended timelines. Failure to obtain and/or comply with required permits can have serious consequences, including damage to Orvana's reputation; stopping Orvana from proceeding with the development of a project; negatively impacting the operation or further development of a mine; increasing the costs of development or production and litigation or regulatory action against Orvana and may materially adversely affect Orvana's business, results of operations or financial condition.

Orvana's ability to successfully obtain and maintain key permits and approvals will be impacted by its ability to develop, operate and close mines in a manner that is consistent with the creation of social and economic benefits in the surrounding communities and may be adversely impacted by real or perceived detrimental events associated with Orvana's activities or those of other mining companies affecting the environment, human health and safety or the surrounding communities.

## **Environmental, Health and Safety Regulations**

Orvana's mining and processing operations and development and exploration activities are subject to extensive laws and regulations governing the protection of the environment, waste disposal, worker safety, mine development, water management and protection of endangered and other special status species. Failure to comply with applicable environmental and health and safety laws and regulations could result in injunctions, fines, suspension or revocation of permits and other penalties. Where the levels of certain regulated elements potentially exceed permitted levels, evaluations have been provided to the appropriate regulatory authorities and remedial actions have been evaluated and/or implemented, as warranted in the circumstances.

OroValle is currently working through one environmental matter involving selenium discharges into the Cauxa River in Asturias, Spain in respect of which it has received and may receive additional monetary sanctions or other sanctions, including the revocation or suspension of certain permits, and is subject to a criminal investigation. OroValle has been working to remediate this matter through various activities including the implementation of a reverse osmosis water treatment plant in September 2014 and the development of a longer-term water management plan, which is in progress. To date, these remediation efforts have not fully addressed these matters and there can be no assurances that OroValle's continuing remediation activities will be successful in the short term, or at all, to achieve full compliance with local regulations. In addition, OroValle has been seeking changes to certain of its permits or, alternatively to receive new permits, relating to these matters, as well as extensions of deadlines to comply with local requirements. See "Health, Safety, Environment and Social Practices - Environment" above.

Activities required to achieve full compliance can be costly and involve extended timelines. Future changes in applicable environmental and health and safety laws and regulations could substantially increase costs and burdens to achieve compliance. Failure to comply with such laws, regulations and permits can have serious consequences, including damage to Orvana's reputation; stopping Orvana from proceeding with the development of a project; negatively impacting the operation or further development of a mine; increasing the costs of development or production; and civil, regulatory or criminal action against Orvana and may materially adversely affect Orvana's business, results of operations or financial condition.

Orvana may also be held responsible for the costs of addressing contamination at the site of current or former activities or at third party sites. Orvana could also be held liable for exposure to hazardous substances. The costs associated with such responsibilities and liabilities may be significant. While Orvana has implemented health and safety initiatives at its sites to ensure the health and safety of its employees, contractors and members of the communities affected by its operations, there is no guarantee that such measures will eliminate the occurrence of accidents or other incidents which may result in personal injuries or damage to property, and in certain instances such occurrences could give rise to regulatory fines and/or civil liability.



In certain of the countries in which Orvana has operations, it is required to submit, for government approval, a reclamation plan for each of its mining sites that establishes Orvana's obligation to reclaim property after minerals have been mined from the site. In Spain, bonds or other forms of financial assurances are required security for these reclamation activities. Orvana may incur significant costs in connection with these reclamation activities, which may materially exceed the provisions Orvana has made for such reclamation. In addition, the unknown nature of possible future additional regulatory requirements and the potential for additional reclamation activities create further uncertainties related to future reclamation costs, which may have a material adverse effect on Orvana's financial condition, liquidity or results of operations. On June 27, 2011, as a condition of receiving an environmental permit on that date, the Government of the Principality of Asturias, required OroValle to commit to post an additional reclamation bond in the amount of €5.0 million (approximately \$5.6 million). To satisfy this requirement, OroValle deposited €5.0 million in September 2011 with a local bank in favour of the Spanish regulatory authorities. As referenced in "Health, Safety, Environment and Social Practices - Environment" above, Spanish regulatory authorities have demanded that an additional reclamation bond of €5.0 million be deposited by the Company under Spanish mining regulations in respect of El Valle. The Company is challenging the requirement to fund the additional reclamation bond through an administrative appeal process. The Company is also working with the Spanish regulatory authorities to come to an agreement regarding posting the bond, including the consideration of alternatives to posting this bond, while preserving the Company's rights during the appeal process. See "Health, Safety, Environment and Social Practices - Environment" above.

### **Political and Related Risks**

Orvana's international assets and operations are subject to various political, economic and other uncertainties, including, among other things, (i) risks of political instability and changing political or economic conditions; (ii) labour and civil unrest, acts of war, terrorism, sabotage, civil disturbances or loss due to theft; (iii) expropriation, nationalization, renegotiation, cancellation or forced modification of existing concessions, licenses, permits, approvals, contracts or property; (iv) adverse changes in laws or policies or increasing legal and regulatory requirements including those relating to taxation, royalties, imports, exports, duties, currency, repatriation restrictions, or other claims by government entities, including retroactive claims and/or changes in the administration of laws, policies and practices; (v) delays in obtaining or the inability to obtain or maintain necessary governmental permits or to operate in accordance with such permits or regulatory requirements; and (vi) restrictions on export of gold, copper or other minerals outside of the countries in which such minerals are mined, restrictions on foreign investment in or ownership of resources and other trade barriers or restrictions.

The Company also may be hindered or prevented from claiming against or enforcing its rights with respect to a government's action because of the doctrine of sovereign immunity. It is not possible for the Company to accurately predict political or social conditions or developments or changes in laws or policy or to what extent, if any, such conditions, developments or changes may have a material adverse effect on the Company's operations. Moreover, it is possible that deterioration in economic conditions or other factors could result in a change in government policies respecting the presently unrestricted repatriation of capital investments and earnings. These risks may limit or disrupt operating mines or projects, restrict the movement of funds, cause Orvana to have to expend more funds than previously expected or required, or result in the deprivation of contract rights or the taking of property by nationalization or expropriation without fair compensation, and may materially adversely affect Orvana's financial position or results of operations.

In Bolivia, the Bolivian constitution provides that the government shall grant mining rights by means of mining contracts in place of the previously established process of granting mining concessions. A process for the migration of mining concessions into mining contracts has finished. Accordingly, previously acquired rights under mining concessions such as those of the Company in respect of "Don Mario" are respected and subject to this migration process.

On May 28, 2014, Law 535 of Mining and Metallurgy (the "New Mining Law") was promulgated in Bolivia. Pursuant to the New Mining Law, the Company must develop its mining activities to comply with the economic and social function, which means observing the sustainability of the mining activities, work creation, respecting the rights of its mining workers, and ensuring the payment of mining patents and the continuity of existing activities. The New Mining Law does not make any substantial changes to the current tax and royalty regimes in relation to mining activities. The Company having met all the requirements under the new Mining Law and related regulation has completed the procedure and has signed 9 of the 10 contracts. The last contract is in process and is expected to be signed in the near future. The company has pre constituted rights under 10 mining areas.

The Company has been carrying out mining activities in Don Mario and has rights over other 9 mining areas with respect to which it has or it is planning to conduct certain exploration activities. In the past, the Bolivian government has nationalized the assets of certain companies in various industries.

In Bolivia, Supreme Decree 1802 provides that when annual gross domestic product (GDP) grows more than 4.5%, an extra month of salary must be paid to all salaried workers in Bolivia, including the private sector, in respect of the month of December (the “Esfuerzo por Bolivia”). In 2019, the GDP grew less than 4.5% and, therefore, the Ministry of Labor did not apply the Esfuerzo por Bolivia rule.

## **Insurance**

Orvana is subject to significant risks and hazards, including environmental hazards, industrial accidents, unusual or unexpected geological conditions, labor force disruptions, civil strife, unavailability of materials, equipment, weather conditions, pit wall failures, rock bursts, cave-ins, flooding, seismic activity, water conditions, theft, terrorism, intrusion and sabotage, most of which are beyond Orvana’s control. These risks and hazards could result in: damage to, or destruction of, mineral properties or producing facilities; personal injury or death; environmental damage; delays in mining; and monetary losses and possible legal liability.

The Company has comprehensive insurance coverage in support of its risk management program to cover some of these risks and hazards. The insurance is maintained in amounts that are believed to be reasonable depending on the circumstances surrounding each identified risk. There is no assurance that all circumstances of loss which may occur will be covered under the Company’s insurance program or that, in the event of a claim, the amount of the Company’s insurance coverage, if any, will be adequate to cover the full amount of the claim.

## **Reliance on Key Personnel and Labour Relations**

The Company’s operations are dependent on the abilities, experience and efforts of key personnel. If any of these individuals were to be unable or unwilling to continue to provide their services to the Company, there may be a material adverse effect on the Company’s operations. The Company’s success is dependent upon its ability to attract and retain qualified employees and personnel to meet its needs from time to time. The Company may be negatively impacted by the availability and potential increased costs that may be associated with experienced key personnel and general labour.

Orvana’s ability to achieve its future goals and objectives is dependent, in part, on maintaining good relations with its employees and minimizing employee turnover. Work stoppages or other industrial relations events at either of Orvana’s operations could lead to delayed revenues, increased costs and delayed operation cash flows. As a result, prolonged labor disruptions at either of Orvana’s operations could have a material adverse impact on its operations as a whole.

## **Community Relations and Social License to Operate**

The Company’s relationship with the communities in which it operates are critical to ensure the future success of its existing operations and the construction and development of its projects. There is an increasing level of public concern relating to the perceived effect of mining activities on the environment and on communities impacted by such activities. Certain non-governmental organizations (“NGOs”), some of which oppose globalization and resource development, are often vocal critics of the mining industry and its practices, including the use of cyanide and other hazardous substances in processing activities. Adverse publicity generated by such NGOs or others related to extractive industries generally, or Orvana’s operations specifically, could have an adverse effect on the Company’s reputation or financial condition and may impact its relationship with the communities in which it operates. While Orvana is committed to operating in a socially responsible manner, there is no guarantee that the Company’s efforts in this respect will mitigate this potential risk. Orvana has implemented community relations initiatives within its areas of influence in both Spain and Bolivia, in order to anticipate and manage social issues that may arise at its operations.

## **Litigation**

Orvana is currently subject to certain litigation and may be involved in disputes with other parties in the future which may result in litigation. The results of litigation cannot be predicted with certainty. The costs of defending or settling such litigation can be significant. If Orvana is unable to resolve these disputes favourably, it may have a material adverse impact on Orvana’s financial performance, cash flow and results of operations. See “Legal Proceedings”.

## Conflicts of Interest

Directors of the Company are or may become directors or officers of other mineral resource companies or have significant shareholdings in such other companies and, to the extent that such other companies may participate in ventures in which the Company may participate, the Company's directors may have a conflict of interest in negotiating and concluding terms respecting the extent of such participation.

## Controlling Shareholder

As at the date of this AIF, Fabulosa owned approximately 51.9% of the outstanding Common Shares. In addition, as described above under the heading "Development of the Business - Transactions with Fabulosa Mines Limited - Related Party Transactions", Fabulosa has certain contractual rights entitling it to nominate directors of the Company. Consequently, Fabulosa currently has the ability to control the election of the Company's board of directors and may be able to cause the Company to undertake corporate transactions without the consent of the Company's other shareholders, including causing or preventing a change of control of the Company. The liquidity of the Common Shares may be adversely affected as only 48.1% of the Common Shares are being freely traded. This, together with Fabulosa's ability to influence the Company, may have a negative impact on the trading price of the Common Shares.

## Share Trading Volatility

The securities of many mineral exploration and development companies, particularly those considered development stage companies, including Orvana's Common Shares, have experienced wide fluctuations in price that have not necessarily been related to the operating performance, underlying asset values or the prospects of such companies, but may be related to global financial and economic conditions, commodities price fluctuations and market liquidity. There can be no assurance that continued fluctuations in the price of Orvana's Common Shares will not occur.

## DIVIDENDS

The Company has not declared any dividends to date. The payment of any future dividends by the Company will be considered by the board of directors having regard to the Company's earnings, financial requirements and other conditions at a future time.

## DESCRIPTION OF CAPITAL STRUCTURE

The authorized capital of the Company consists of an unlimited number of Common Shares. As at September 30, 2019, there were 136,623,171 Common Shares outstanding. As at the date of this AIF, Fabulosa held 70,915,027 Common Shares, representing 51.9% of the currently outstanding Common Shares.

Each Common Share carries one vote at all meetings of shareholders, is entitled to receive dividends as and when declared by the Board, and is entitled to participation in the remaining property and assets of the Company upon dissolution or winding-up.

As described above under the heading "Development of the Business - Transactions with Fabulosa Mines Limited - Related Party Transactions", Fabulosa has a pre-emptive right with respect to the issuance of additional Common Shares or securities convertible into Common Shares to other persons, entitling Fabulosa to acquire Common Shares or convertible securities on the same terms and conditions as those so issued by the Company, subject to applicable requirements of the Toronto Stock Exchange.

Orvana has adopted a 2006 stock option plan (the "2006 Option Plan"), a 2018 stock option plan ("2018 Stock Option Plan"), a Restricted Share Unit Plan for designated executives (the "RSU Plan"), a Deferred Share Unit Plan for directors (the "DSU Plan") and a Stock Appreciation Plan for designated executives (the "SAR Plan"). The 2018 Stock Option Plan was adopted by the shareholders of the Company at the annual general & special shareholders meeting held on February 14, 2018. Since the adoption of the 2018 Stock Option Plan, no further grants of options will be made by the Company under to the 2006 Stock Option Plan. Information relating to the Option Plan, the RSU Plan, the DSU Plan and the SAR Plan and securities outstanding thereunder is set out in Orvana's most recent management information circular filed at [www.sedar.com](http://www.sedar.com).

## MARKET FOR SECURITIES

The Common Shares are listed and traded on the Toronto Stock Exchange under the symbol "ORV". The following table provides the historical monthly trading price ranges and volumes for the Common Shares during the fiscal year ended September 30, 2019:

| <b>Trade Date</b> | <b>Symbol</b> | <b>High Price</b> | <b>Low Price</b> | <b>Trade Volume</b> |
|-------------------|---------------|-------------------|------------------|---------------------|
| September 2019    | ORV           | 0.325             | 0.20             | 1,858,836           |
| August 2019       | ORV           | 0.40              | 0.305            | 2,129,661           |
| July 2019         | ORV           | 0.405             | 0.27             | 3,089,511           |
| June 2019         | ORV           | 0.315             | 0.21             | 2,591,283           |
| May 2019          | ORV           | 0.215             | 0.155            | 1,014,154           |
| April 2019        | ORV           | 0.195             | 0.165            | 318,659             |
| March 2019        | ORV           | 0.215             | 0.18             | 1,268,741           |
| February 2019     | ORV           | 0.23              | 0.165            | 1,358,945           |
| January 2019      | ORV           | 0.19              | 0.14             | 1,126,714           |
| December 2018     | ORV           | 0.155             | 0.125            | 1,177,202           |
| November 2018     | ORV           | 0.16              | 0.12             | 773,292             |
| October 2018      | ORV           | 0.17              | 0.145            | 1,546,013           |

## DIRECTORS AND OFFICERS

The names and provinces/states of residence of the directors and officers of the Company as at the date of this AIF, the positions and offices held by them with the Company, and their principal occupations for the past five years are set forth in the following table.

| Name and Province or State and Country of Residence | Position with the Company (1) | Principal Occupation For Past Five Years   |
|---|-------------------------------|--|
| Darling, George(3)(4) British Columbia, Canada      | Director since February 2017  | <p>Senior VP Engineering, Sandstorm Gold Ltd., a gold streaming and royalty company (current)</p> <p>Senior Mine Consultant and Regional Director at Hatch Ltd., a mining business and technical consulting company</p> <p>Senior Mine Consultant and Regional Director of SNC-Lavalin</p>   |
| Edwards, Alan (2) (4) Arizona, USA                  | Director since May 2016       | <p>President of AE Resources Corp., a mining consulting company (current)</p> <p>Director, Chairman of the Technical Committee of Entrée Resources Ltd., a mineral resource company (current)</p> <p>Director, Chairman of the Sustainability and Technical Committee of Americas Gold and Silver Corporation (current)</p> <p>Non-Executive Chairman of the Board of Rise Gold Corp.</p> <p>Non-Executive Chairman of the Board of Mason Resources Corp.</p> <p>Principal of Gladiator Mining Group LLC</p> <p>Director of Detour Gold Corporation</p> <p>Non-Executive Chairman of the Board of AQM Copper Inc.</p> <p>Non-Executive Chairman of the Board, Chairman of the Sustainability Committee of AuRico Gold Corporation</p> <p>Non-Executive Chairman of the Board Director, President, Chief Executive Officer, and Director of Oracle Mining Corp. (5)</p> |
| Garcia Gonzalez, Alfredo(4) Santiago, Chile         | Director since February 2018  | <p>Businessman with over 40 years' experience in the mining business, most of them related with base metals and gold exploration (current)</p> <p>Regional Exploration Manager (International Division) of Antofagasta plc, a Chilean copper mining group, from 2011 to 2017.</p>  |
| Guimaraes, Edmundo (2) Ontario, Canada              | Director since February 2013  | <p>Chief Financial Officer of Sierra Metals Inc., precious and base metals producer in Latin America (current)</p> <p>Director of Aldridge Minerals Inc.</p>   |

| <b>Name and Province or State and Country of Residence</b> | <b>Position with the Company (1)</b>   | <b>Principal Occupation For Past Five Years</b>  |
|--|--|--|
| Magner, Sara (3)<br>Virginia, U.S.A.                       | Director since<br>November 2015  | Trustee and member of the Executive Committee of The Langley School (current)<br>Corporate Secretary and General Counsel of Minera S.A.(6), affiliate of Fabulosa<br>Associate of Greenberg Traurig LLP  |
| Pridham, Gordon (2) (3)<br>Ontario, Canada                 | Chairman since<br>February 2018<br><br>Lead Director since<br>August 2016<br><br>Director since<br>November 2014 | Director and Chair of Newalta Corporation and director of America Gold and Silver Corporation (previously Scorpio Mining Corporation (current))<br><br>Director and Chair of the board of CHC Student Housing Corp. (current)<br>Principal of Edgewater Capital (current)<br>Advisory board member of Enertech Capital (current)<br>Executive Chairman of Titanium Corporation Inc.<br>Director of Roxgold Inc., a gold mining company with operations in West Africa. |
| Gavidia, Juan Florida, U.S.A.                              | Chief Executive Officer since January 2018   | Vice-President, Operations of Orvana Minerals Corp.<br>Independent consultant, general management & operations related to gold and copper projects   |
| Menendez, Nuria Asturias, Spain                            | Chief Financial Officer since May 2018   | General Manager of OroValle Minerals, a subsidiary of Orvana Minerals Corp.<br>Manager at Deloitte (Spain)   |
| Vu, Binh Ontario, Canada                                   | VP Legal Affairs since November 2018<br><br>General Counsel since December 2017                                  | General Counsel of Alberta Oilsands Inc.<br>Partner at Aird & Berlis LLP   |

- (1) The term of office of each director expires at the close of the next annual meeting of shareholders of the Company. An officer of the Company serves until such officer resigns or his or her replacement is appointed.
- (2) Member of the Audit Committee.
- (3) Member of the Compensation, Nominating and Corporate Governance Committee.
- (4) Member of the Safety, Environment and Technical Committee.
- (5) Mr. Edwards was Chairman of the Board of Oracle Mining Corp. (“Oracle”) until his resignation effective February 15, 2015. On December 23, 2015, Oracle announced that the Superior Court of Arizona had granted the application of Oracle’s lender to appoint a receiver and manager over the assets, undertaking and property of Oracle Ridge Mining LLC.
- (6) Minera S.A. is an international mining holding company.

As at the date of this AIF, to the knowledge of the Company, the directors and officers of the Company as a group beneficially owned, or exercised control or direction over, directly or indirectly, an aggregate of 42,250 Common Shares of the Company representing approximately 0.03% of the outstanding Common Shares of the Company.

## **LEGAL PROCEEDINGS**

As disclosed in “Health, Safety, Environment and Social Practices - Environment” above, a judge of criminal court of Asturias is conducting an investigation into the potential commission by OroValle of a reckless crime against the environment under the Spanish penal code. The judge may decide to dismiss the matter, conduct a further investigation and/or charge OroValle and/or certain OroValle individuals. If OroValle is ultimately found responsible, monetary penalties, amongst other sanctions, may be applied. These sanctions could have a material impact on the Company. At this time, OroValle has not been charged. It has cooperated and will continue to cooperate with investigations and is defending itself vigorously. The Company may be involved in other legal proceedings from time to time, arising in the ordinary course of its business. The amount of ultimate liability with respect to these actions will not, in the opinion of management, materially affect the Company’s financial position, results of operations or cash flows. The Company does not believe that the outcome of any of the matters not recorded in its financial statements, individually or in aggregate, would have a material adverse effect.

## **INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS**

During fiscal 2019, 2018 and 2017, the Company entered into certain transactions with Fabulosa, a 51.9% shareholder of Orvana. For a description of these transactions, see “Development of the Business - Transactions with Fabulosa Mines Limited - Related Party Transactions”.

## **TRANSFER AGENT AND REGISTRAR**

As at the date of this AIF, the Company’s transfer agent and registrar is AST Trust Company (Canada), Toronto Street, Suite 1200, Toronto, Ontario, M5C 2V6.

## **MATERIAL CONTRACTS**

Other than contracts described in this AIF, there are no other material contracts entered into before fiscal 2019, but still in effect or entered into during fiscal 2019.

## **AUDIT COMMITTEE DISCLOSURE**

### **The Audit Committee’s Charter**

The Charter of the Audit Committee of the Company is included in this AIF as Appendix A.

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

The Audit Committee members are Edmundo Guimaraes (Chair), Gordon Pridham and Alan Edwards, each of whom is “independent” and “financially literate”, as such terms are defined in Multilateral Instrument 52-110 - Audit Committees of the Canadian Securities Administrators (“MI 52-110”).

Mr. Edmundo Guimaraes is a Chartered Professional Accountant, Chartered Accountant and holds a Bachelor of Arts in Administrative and Commercial Studies. He is the Chair of the Audit Committee, the Chief Financial Officer of Sierra Metals Inc. and has been an independent business consultant since 2008. Prior to that, Mr. Guimaraes was Executive Vice President, Finance and Chief Financial Officer of Aur Resources Inc. Mr. Guimaraes is a director and member of audit committees of certain other Canadian public companies.

Mr. Gordon Pridham is a graduate of the University of Toronto and the Institute of Corporate Directors program. He has spent a career working for global financial institutions that financed and advised companies in public and private markets across a broad range of industry sectors. He has served on numerous other audit committees.

Mr. Alan Edwards holds an MBA, with an emphasis in Finance, and Bachelor of Science in Mining Engineering both from the University of Arizona in Tucson, Arizona. He has spent a career working in various positions including senior leadership and executive roles, such as CEO and president, with various companies in the global mining sector.

## Pre-approval Policies and Procedures

The charter of the Audit Committee requires prior approval by the Audit Committee of non-audit services to be provided by the Company's auditors or, if the Audit Committee determines it to be appropriate, prior approval by the Chair of the Audit Committee. In the latter case, any pre-approval must be presented to the full Audit Committee at its next scheduled meeting.

## External Auditor Service Fees

The following table sets forth the fees incurred by Orvana during fiscal 2019 and fiscal 2018 in respect of the services set out below provided by PwC, the Company's external auditors:

| <b>Fiscal Year ended September 30, (US\$'000)</b> | <b>2019</b>  | <b>2018</b>  |
|---|--------------|--------------|
| Audit fees <sup>(1)</sup>                         | 332          | 311          |
| Audit-related fees <sup>(2)</sup>                 | 4            | -            |
| Tax fees <sup>(3)</sup>                           | 18           | 19           |
| All other fees <sup>(4)</sup>                     | -            | 4            |
| <b>Total fees<sup>(5)</sup></b>                   | <b>\$354</b> | <b>\$334</b> |

- (1) "Audit fees" include the aggregate professional fees billed by PwC for the audit of the annual consolidated financial statements of the Company. Audit fees are reflected according to the agreement for each fiscal year.
- (2) "Audit-related fees" include the fees billed by PwC for assurance and related services that are reasonably related to the performance of the audit and are not included in "Audit fees".
- (3) "Tax fees" include the aggregate fees billed by PwC for tax compliance, tax advice, tax planning and advisory services relating to the preparation of corporate income tax and capital tax returns.
- (4) "All other fees" include the aggregate fees billed by PwC for all other products and services other than those presented in the categories of audit, audit-related fees and tax fees.
- (5) Reimbursements of expenses are excluded from the above.



## INTERESTS OF EXPERTS

PwC LLP is Orvana's external auditor and prepared the "Independent Auditors' Report to the Shareholders of Orvana Minerals Corp.", dated November 26, 2019 in respect of the 2019 Financials. PwC has informed Orvana that it is independent with respect to Orvana within the meaning of the Rules of Professional Conduct of the Chartered Professional Accountants of Ontario.

Each of the following individuals is a "qualified person" for the purposes of NI 43-101: Mr. Jason J. Cox, P.Eng., of RPA (such individual being the overall author of El Valle Mine 43-101 Report and having approved of the scientific and technical information from El Valle Mine 43-101 Report disclosed in Appendix B of this AIF, unless otherwise indicated) and Mr. Michael Cullen of Mercator and Mr. Gino Zandonai of DGCS (such individuals being the author of the Don Mario 43-101 Report and having approved of the scientific and technical information from the Don Mario 43-101 Report disclosed in Appendix B of this AIF, unless otherwise indicated).

Mr. Brian W. Buss supervised the estimate of El Valle's mineral reserves as at September 30, 2019 and the subsequent development of the Life of Mine Plan for El Valle (the "El Valle LOMP"). Mr. Buss, a Professional Mining Engineer, registered in the province of Ontario, Canada, is a qualified person independent of the Company for the purposes of reporting under NI 43-101. He has approved the scientific and technical information relating to El Valle Mine disclosed in this AIF. Ms. Guadalupe Collar Menéndez supervised the estimate of El Valle's mineral resources as at September 30, 2019. Ms. Collar Menéndez, the Chief of Geology at OroValle, is a qualified person who is not independent of the Company for the purposes of NI 43-101 and has approved all of the scientific and technical information relating to El Valle Mine disclosed in this AIF. Mr. Zandonai supervised the estimates of Don Mario's mineral resources and mineral reserves as at September 30, 2019 and the development of the Life of Mine Plan for Don Mario (the Don Mario "LOMP"). Mr. Zandonai is a qualified person who is independent of the Company for the purposes of NI 43-101 and has approved of the scientific and technical information relating to Don Mario Mine disclosed in this AIF.

To the knowledge of Orvana, as of the date hereof, none of such individuals beneficially own, directly or indirectly, any Common Shares of Orvana or securities convertible into Common Shares of Orvana.

## ADDITIONAL INFORMATION

Additional information with respect to Orvana, including directors' and officers' remuneration and indebtedness, principal holders of Orvana's securities and securities authorized for issuance under equity compensation plans, where applicable, is contained in Orvana's management information circular for its most recent annual meeting of shareholders that involved the election of directors. Additional financial information is provided in the 2019 Financials and management's discussion and analysis for fiscal 2019, the Company's most recently completed financial year. This information and additional information relating to Orvana are available on Sedar at [www.sedar.com](http://www.sedar.com) and on Orvana's website at [www.orvana.com](http://www.orvana.com).

## **APPENDIX A**

### **ORVANA MINERALS CORP. - ANNUAL INFORMATION FORM**

# APPENDIX A

## ORVANA MINERALS CORP. - ANNUAL INFORMATION FORM

### Charter of the Audit Committee

#### 1. Purpose

The Audit Committee (the "Committee") of the Board of Directors (the "Board") of Orvana Minerals Corp. (the "Corporation") is appointed by the Board to assist the Corporation and the Board in fulfilling their respective obligations relating to the integrity of the internal financial controls and financial reporting of the Corporation.

#### 2. Membership

##### Independence

The Committee shall consist of such number of members (at least three) as are appointed from time to time by the Board. Unless otherwise determined by the Board and permitted by Multilateral Instrument 52-110 - *Audit Committees* ("MI 52-110"), the Committee shall be composed solely of directors who have no direct or indirect material relationship with the Corporation which could, in the view of the Board, reasonably interfere with the exercise of such director's independent judgement, and are otherwise independent as determined in accordance with MI 52-110.

##### Financial Literacy

Unless otherwise determined by the Board and permitted by MI 52-110, all members of the Committee shall be financially literate, meaning they shall have the ability to read and understand a set of financial statements that present a breadth and level of complexity of accounting issues generally comparable to the issues that can reasonably be expected to be raised by the Corporation's financial statements.

##### Chair of the Audit Committee

The Board shall appoint the Chair of the Committee. The Board may, by resolution, at any time remove any member of the Committee, with or without cause, or add to or otherwise change the membership of the Committee. Committee membership shall not, however, be reduced to less than three or vary from the qualification requirements specified above. A member of the Committee shall cease to be a member upon ceasing to be a director of the Corporation.

### 3. Duties and Responsibilities

The Committee shall have all the powers and duties conferred on it by the laws governing the Corporation and such other powers and duties as may be conferred on it from time to time by resolution of the Board. In addition to the foregoing powers and duties, the Committee shall have the following duties and responsibilities:

- (a) To review, prior to approval thereof by the Board and public disclosure thereof, all financial statements of the Corporation, whether annual or periodic, and the external auditor's report, if any, thereon and any annual or interim MD&A (a) prepared for submission to a meeting of the directors of the Corporation, (b) which may be required by applicable law to be reviewed by the Committee or (c) which the Board may by resolution determine shall be so reviewed, and to report to the Board:
  - (i) if the same have been prepared in accordance with the laws to which the Corporation is subject and the policies from time to time adopted by the Board;
  - (ii) any significant changes in the form or content of such statements from the corresponding statements most recently approved by the Board and the reason(s) therefore, together with any intervening developments in relevant accounting principles, policies and practices which have been taken into account in preparing such financial statements or which, in the opinion of the Committee or the external auditor of the Corporation, might have been taken into account for that purpose; and
  - (iii) relating to the report of the external auditor as to form and content of such statements and as to the level of co-operation of management received by the external auditor in the conduct of the audit.
- (b) To review all annual or periodic financial results press releases of the Corporation prior to public disclosure by the Corporation.
- (c) To satisfy itself that adequate procedures are in place for the review of public disclosure of any financial information of the Corporation including the information listed in (1) and (2) above and to periodically assess such procedures.
- (d) To review all financial statements of the Corporation, whether annual or periodic, appearing in a prospectus.
- (e) To review estimates and judgments that are material to reported financial information and consider the quality and acceptability of the Corporation's accounting policies and procedures and the clarity of disclosure in financial statements.
- (f) To review such investments and transactions that could adversely affect the well-being of the Corporation as the external auditor or any officers of the Corporation may bring to the attention of the Committee.
- (g) To receive reports on the periodic findings of any regulatory authority and management's response and observations thereon.
- (h) To meet with the external auditor to discuss the quarterly and annual statements and the transactions referred to in this Charter.
- (i) To review the audit plan, including such factors as the integration of the external auditor's plan for procedures performed in Canada and elsewhere and whether the nature and scope of the planned audit procedures can be expected to detect material weaknesses in internal controls and determine if financial statements present fairly and accurately the Corporation's financial position in accordance with generally accepted accounting principles.
- (j) To identify the risks inherent in the business of the Corporation and to review and approve management's risk philosophy and risk management policies necessary to address as much as reasonably possible those identified risks.
- (k) To satisfy itself that management has taken appropriate actions to ensure the effective management of such risks and to review periodic reports received from management in order to perform its oversight role.
- (l) To review periodically, but at least annually, management reports demonstrating compliance with risk management policies and confirm annually that management has taken reasonable steps to ensure compliance with standards.

- (m) To review and recommend to the Board the appointment of an external auditor and the compensation of such external auditor.
- (n) To review and evaluate the performance of the external auditor, including how and under what circumstances external auditors are to be rotated or removed, such review to include, but not be limited to:
  - (i) a review of estimated and actual fees;
  - (ii) a review of the engagement letter of the external auditor and the scope and timing of the audit work;
  - (iii) pre-approval of all non-audit work to be performed by the external auditor and the fees to be paid therefor; and
  - (iv) at least annually, obtaining and reviewing a report by the external auditor describing (A) the internal quality-control procedures of the external auditor; and (B) any material issues raised by the most recent internal quality-control review, peer review, review by any independent oversight body such as the Canadian Public Accountability Board or governmental or professional authorities within the preceding five years respecting one or more independent audits carried out by the external auditor and the steps taken to deal with any issues raised in these reviews.
- (o) To ensure that the Corporation complies with the guidelines of the *Canadian Institute of Chartered Accountants* relating to the hiring of current and former partners and employees of the external auditor.
- (p) To be directly responsible for overseeing the work of the external auditor including the resolution of disagreements between management and the external auditor regarding financial reporting.
- (q) To review with the external auditor the performance of management involved in the preparation of financial statements, any problems encountered by the external auditor, any restrictions on the external auditor's work, the co-operation received in performance of the audit and the audit findings, any significant recommendations made to management on internal controls and other financial and business matters and management's response to the recommendations.
- (r) To provide the external auditor with the opportunity to meet with the Committee without management present at least once per year for the purpose of discussing any issues.
- (s) If determined appropriate by the Committee, to delegate authority to pre-approve non-audit services of the external auditor to the chair of the Committee, which pre-approval must be presented to the full Committee at its next scheduled meeting.
- (t) To confirm the accountability of the external auditor to the Committee and the Board and to satisfy itself that the external auditor's independence in carrying out the audit function is not impaired by either management or the external auditor's own action or activities.
- (u) To require the management of the Corporation to implement and maintain appropriate internal control and data security procedures and oversee their implementation and operation.
- (v) To review periodic reports received from the internal auditor of the Corporation or a third party internal auditor (the "Internal Auditor") with respect to the Corporation's system of disclosure controls and procedures and internal control over financial reporting, including annual plans as applicable, and to review any material matters arising from any known or suspected violation of the Code of Business Conduct and Ethics of the Corporation with respect to financial and accounting matters raised through the Company's whistleblower line or otherwise.
- (w) To review the competencies, skills, experience and areas of expertise of a potential candidate for the position of Chief Financial Officer of the Corporation.
- (x) To conduct any investigation considered appropriate by the Committee.
- (y) To review the competence and adequacy of the Corporation's staffing for the accounting, financial and internal audit functions.
- (z) To establish a satisfactory procedure for the receipt, retention and handling of complaints received by the Corporation regarding accounting, internal accounting controls or auditing matters, which will include procedures for the confidential, anonymous submission of concerns by employees with regard to these matters.

- (aa) To report and make recommendations to the Board arising from its responsibilities as the Committee considers appropriate.
- (bb) The Committee shall complete any other duties and responsibilities delegated by the Board to the Committee from time to time.

To ensure that the Committee is able to discharge the foregoing duties and responsibilities, the Corporation shall require the external auditor and Internal Auditor to report periodically directly to the Committee.

#### **4. Review of Internal Audit Function**

The Committee shall review the mandate of the Internal Auditor, the annual budget and planned activities and organizational structure thereof to ensure that it is independent of management and has sufficient resources to carry out its mandate.

The Committee shall meet in camera with the Internal Auditor as frequently as the Committee determines is appropriate for the Committee to fulfil its responsibilities to discuss any areas of concern to the Committee or to the Internal Auditor to confirm that (i) significant resolved and any unresolved issues between the Internal Auditor and management have been brought to the attention of the Committee; (ii) the principal risks of the Company's businesses have been identified by management and appropriate policies and systems have been implemented to manage these risks; and (iii) the integrity of the Company's internal control and management information systems are satisfactory.

#### **5. Minutes**

Minutes shall be kept of all meetings of the Committee. The Chair of the Committee may appoint a Committee member or any other attendee to be the secretary of a meeting.

#### **6. Meetings**

Except as otherwise provided in this mandate, the rules and regulations relating to the calling and holding of and proceedings at meetings of the Committee shall be those, making allowance for the fact that it is a committee, that apply to meetings of the Board, subject to such modifications as may, from time to time, be determined by resolution of the Committee. Until otherwise determined by resolution of the Board:

- (a) The quorum for meetings of the Committee shall be two of its members.
- (b) Meetings of the Committee may be called by its Chair or Vice Chair, if any, or by any member of the Committee, or by the external auditor of the Corporation. The Committee may at any time request the attendance of any officer of the Corporation or any person at any meeting of the Committee. Any member of the Committee may request the external auditor of the Corporation to attend every meeting of the Committee held during the member's term of office.
- (c) The external auditor of the Corporation shall receive notice of every meeting of the Committee and may attend and be heard at any meeting.
- (d) Meetings of the Committee shall be held at such time and place as may be determined from time to time by the Committee or by the Chair or Vice Chair, if any, of the Committee (but in no event less than once quarterly), and notice thereof shall be given in the manner and with the length of notice provided in the resolution(s) of the Board relating to notices of meetings of directors.

#### **7. Reports to the Board**

The Committee shall report to the Board as follows:

- (a) In the case of interim and annual statements and any returns that under applicable legislation must be approved by the Board, the Committee shall report thereon to the Board before approval is given.
- (b) All significant actions of the Committee shall be reported to the Board preferably at its next succeeding regular Board meeting or, if not possible, at the following meeting of the Board and shall be subject to revision or alteration by the Board.

- (c) The Committee may call a meeting of the Board to consider any matter of concern to the Committee.

## **8. Access to Information**

In its discharge of the foregoing duties and responsibilities, the Committee shall have the authority to communicate directly with the external auditor and shall have free and unrestricted access at all times, either directly or through its duly appointed representatives, to the relevant accounting books, records and systems of the Corporation and shall discuss with the employees and auditors of the Corporation such books, records, systems and other matters considered appropriate.

## **9. Independent Advisors**

The Committee shall have the authority to engage such independent counsel and other advisors as it may from time to time deem necessary or advisable for its purposes and to set and cause to be paid by the Corporation the compensation of any such counsel or advisors.

## **10. No Rights Created**

This Charter is a broad policy statement and is intended to be part of Committee's flexible governance framework. While this Charter should comply with all applicable laws, regulations and listing requirements and the Company's articles and by-laws, this Charter does not create any legally binding obligations on the Committee, the Board or the Corporation.

## **11. Board Review of Charter**

The Board shall review the adequacy of the Committee's charter on at least an annual basis. In accordance with MI 52-110, the text of this Charter shall be included in the Corporation's Annual Information Form.

## **APPENDIX B**

### **ORVANA MINERALS CORP. - ANNUAL INFORMATION FORM**



## APPENDIX B

### ORVANA MINERALS CORP. - ANNUAL INFORMATION FORM

#### Principal Mineral Projects

Terms not otherwise defined herein are defined in the Annual Information Form of Orvana dated December 27, 2019.

#### El Valle Mine

The following is the summary section of the El Valle Mine 43-101 Report entitled “*Technical Report on the El Valle Boinas – Carles Operation, Asturias, Spain*” dated September 26, 2014 prepared by Qualified Persons, Jason J. Cox, P.Eng., Jeff Sepp, P.Eng., Sean D. Horan, P.Geo. and Breanna J.Y. Scholey, P.Eng of RPA Inc. The full text of the El Valle Mine 43-101 Report is available for viewing on SEDAR at [www.sedar.com](http://www.sedar.com) and is incorporated by reference in this AIF. Defined terms and abbreviations used herein and not otherwise defined shall have the meanings ascribed to such terms in the El Valle Mine 43-101 Report.

#### SUMMARY EXECUTIVE SUMMARY

Roscoe Postle Associates Inc. (RPA) was retained by Orvana Minerals Corporation (Orvana) to prepare an independent Technical Report on the Kinbauri España – El Valle, Boinás, and Carlés Operation (EVBC Operation, EVBC, or the Project), located in the Asturias region of Spain in the municipalities of Belmonte de Miranda and Salas. The purpose of this report is to disclose Mineral Resource and Mineral Reserve estimates for the operation, as at September 30, 2014. This Technical Report conforms to NI 43-101 Standards of Disclosure for Mineral Projects. RPA visited the property from June 1 to 13, 2014.

Orvana is a gold and copper producer with operations in Spain and Bolivia. In September 2009, Orvana acquired Kinbauri Gold Corp and with it the past-producing EVBC Operation. Orvana operates EVBC through its wholly owned subsidiary, Kinbauri España S.L.U. (Kinbauri). The EVBC Operation commenced commercial production in August 2011.

The EVBC Operation consists of underground mines at Boinás and Carlés (El Valle open pit mining has been completed), producing a nominal 2,000 tonnes per day ore, of two material types – oxides and skarns. A gravity-flotation-leach processing plant, located at Boinás, produces doré bars and copper concentrate with gold and silver credits. Total production for fiscal year end 2013 (Orvana’s fiscal year runs from October to September) was 66,000 ounces of gold and 6.7 million pounds of copper.

Mineral Reserves total 2.2 Mt, at grades of 4.29 g/t Au, 0.67% Cu, and 13.4 g/t Ag. A Life of Mine Plan (LOMP) for EVBC forecasts three years of mining at similar production rates, followed by two years of reduced, oxide-only production. Carlés will soon be placed on care and maintenance, pending an improved economic mining plan or higher metal prices, due to a lack of mineralization above cut-off grade.

#### CONCLUSIONS

RPA offers the following conclusions based on a review of the Project information:

#### GEOLOGY AND MINERAL RESOURCES

Drilling, logging and sampling methodologies meet industry standard and are suitable to support Mineral Resource and Reserve Estimation.

The sampling method and approach is reasonable to support resource estimation.

The sample preparation, analysis, and security procedures at EVBC are adequate for use in the estimation of Mineral Resources.

The quality assurance and quality control (QA/QC) program as designed and implemented by Orvana is adequate and the assay results within the database are suitable for use in a Mineral Resource and Mineral Reserve estimate.

The database contains no significant errors and is suitable to support Mineral Resource and Mineral Reserve estimation.

The Mineral Resource estimate, including databases, geological interpretation, compositing, capping, variography, block models, interpolation strategy, validation, cut-off grade, classification and Mineral Resource reporting is appropriate for the style of mineralization and the resource models are reasonable and acceptable to support the 2014 fiscal year-end Mineral Resource and Mineral Reserve estimates.

Measured and Indicated Mineral Resources total 6.0 Mt, grading 4.41 g/t Au, 0.69% Cu and 13.98 g/t Ag, containing 850,900 oz Au, 41,500 t Cu and 2,700,500 oz Ag.

Inferred Mineral Resources total 6.0 Mt, grading 5.05 g/t Au, 0.45% Cu and 6.80 g/t Ag, containing 979,500 oz Au, 26,900 t Cu and 1,318,600 oz Ag.

There is significant potential to upgrade Inferred Resources to the Indicated category and for expansion of known zones along their peripheries.

## **MINING AND MINERAL RESERVES**

Proven and Probable Mineral Reserves total 2.2 Mt, grading 4.29 g/t Au, 0.67% Cu and 13.41 g/t Ag, containing 302,000 oz Au, 14,700 t Cu and 944,000 oz Ag. Mineral Reserves are estimated at metal prices of US\$1,100 per oz gold, US\$2.75 per lb copper, and US\$20 per oz silver.

Considerable marginal grade material is included in the Mineral Resources, and excluded from Mineral Reserves, due to application of dilution factors and higher cut-off grades. In the future, small changes in cut-off grades may have a large impact on Mineral Reserve tonnage.

Mining unit costs are known to vary significantly by material type, with low-productivity oxide mining via hydraulic hammer being considerably more expensive than higher-productivity longhole mining in the skarns.

The LOMP production schedule forecasts three years of mining at near-current production rates, followed by two years of reduced, oxide-only production. Higher head grades provide gains on metal production relative to recent results (increasing to an average of 72,000 oz gold for the next three years).

Production activities are expected to continue at Carlés from developed areas through to early 2015, following which this mine will be placed on care and maintenance status. The decision was taken after drilling results indicated lower grades in the future mining blocks below current activities. The Carlés mechanized crew will be moved to assist with ramping up production in the higher grade Boinás Mine.

Average LOMP operating costs are estimated to be US\$131 per tonne milled. Sustaining capital costs are estimated to total US\$43 million.

Cash flow analysis of the LOMP verified that Mineral Reserves are economically mineable, under the metal price and cost assumptions summarized in this report.

## **MINERAL PROCESSING AND METALLURGICAL TESTING**

Operating results from the last three years have demonstrated the following:

- Tonnages treated include approximately 20% Boinás oxide ore, 46% Boinás skarn ore and 34% Carlés skarn ore.
- The operation has a sound basis of consistent production data.
- Total average Au and Ag recoveries were 92% and 79%, respectively.
- Total Cu recoveries averaged between 81% and 84%, despite a slight falling trend in head grades.

Changes to the mill feed composition will show up soon, as a result of the updated LOMP, including the elimination of Carlés skarn ore and increases in the proportion of oxide ore to skarn ore. Going forward, the projected recoveries should be updated based on metallurgical testwork conducted on the new ore blend. Potential changes in the concentration of deleterious elements in the subsequent ore blend should also be identified.

Ore samples for metallurgical testwork should be representative of the ore blend for each year for the remainder of the mine plan.

Keeping fluorine grades in copper concentrate below threshold limits is likely to be an issue for the next three years, as the proportion of Boinás skarn ore (the highest- fluorine feed source) is higher than in the past. Following that, Boinás oxide ore will become the dominant feed source, and issues with fluorine will ease.

## **RECOMMENDATIONS**

RPA offers the following recommendations:

### **GEOLOGY AND MINERAL RESOURCES**

Focus exploration and resource work on skarn type material to maintain the blend of mill feed moving forward.

Consistently assay for fluorine and include results in the Mineral Resource estimate for mine planning purposes. Consider re-assaying previous drill core in critical areas to generate better fluorine estimates.

Investigate the use of implicit or traditional wireframe modeling of grade distributions within the larger domain wireframes.

Perform a study to determine sub-domaining thresholds more relevant to the Mineral Resource and Reserve cut-off grades.

Continue to consistently produce long and short term block models and comparisons should be reported accordingly.

Prorate mill grade and tonnes back to headings and stopes based on proportions determined during grade control sampling and implement a reconciliation system comparing mill results with short-term and long-term models.

Reevaluate the classification for each zone in conjunction with an empirically driven drill hole spacing study and update the models generated prior to 2014 to include a final classification processing step.

### **MINING AND MINERAL RESERVES**

Review production and cost performance as the blend of ore types changes, and incorporate results into updated cut-off grade estimates.

Incorporate blending for fluorine feed grade in short- and long-term mine planning.

Undertake a review of alternatives for Carlés, including targeting narrow high-grade areas with more suitable mining methods and further exploration of certain zones.

Investigate the possibilities of installing a backfill raise system in order to reduce the demands of the truck fleet.

### **MINERAL PROCESSING AND METALLURGICAL TESTING**

Additional metallurgical testwork should be carried out to consider the impact of the following:

- Changes in the zones to be mined as a result of updates to the Mineral Resources and Mineral Reserves and LOMP and the elimination of Carlés skarn ore from production.
- Potential changes in the concentration of deleterious elements, such as fluorine, in the subsequent ore blend, which could impact the grade of the final concentrate.

Metallurgical testwork should include (but not be limited to) the following scope items:

- Mineralogical characterization and metal deportment analysis on a broad range of ore samples representative of the areas to be mined and on intermediate products from the extraction process.
- Review the deportment of fluorine through the process, and investigate methods of reducing fluorine recovery to concentrate.

## **TECHNICAL SUMMARY**

### **PROPERTY DESCRIPTION AND LOCATION**

The EVBC Operation is located in northwestern Spain within the Oviedo Province, Asturias Principality approximately 35 km west of the Asturian Capital, Oviedo, and 30 km south of the north coast of Spain along the Cantabrian Sea.

The mining concessions combined occupy a total surface area of 4,298 hectares, which includes the Ortosa-Godán and La Brueva areas which are not currently being exploited. The property includes two Investigative Permits comprising 753.60 hectares.

### **LAND TENURE**

The properties are controlled by Kinbauri España S.L.U. Orvana acquired the project through the purchase of Kinbauri Gold Corp. (KGC) in September 2009.

The mineral rights for the properties are held in the form of Exploitation Concessions (EC) and Investigation Permits (IP). The EC provides the holder of the concession the right to extract minerals from a specified area, subject to approval of an Exploitation Plan by the Mining Authorities. The term is for 30 years and is renewable upon application. The Exploitation Plan includes the Environmental Impact Study and the subsequent Restoration Plan, which were approved in 1996 and in 2000.

An IP provides the holder of the permit the right to investigate the resources in the permit area, subject to approval of an Investigation Plan by the Mining Authorities. The holder has the right to carry out all types of exploration activities including geological studies, soil geochemistry, geophysics, and drilling. If there is any activity on surface that the mining authorities believe may affect the environment, the company may be required to get additional approvals from environmental authorities. The term is for three years and is renewable upon application.

RPA is not aware of any environmental liabilities on the property. Orvana has all material permits to operate EVBC. RPA is not aware of any other significant factors and risks that may affect access, title, or the right or ability to operate EVBC.

### **EXISTING INFRASTRUCTURE**

Surface and underground infrastructure at the EVBC Operation include the following:

- A 2,000 tpd processing facility
- A tailings pond located in an old open pit
- Shops, offices, warehouse facilities, and a mine dry
- Site power supply
- A shaft equipped for hoisting
- A decline and a series of ramp-connected levels

## HISTORY

Prior to Orvana's involvement at EVBC, Boinás and Carlés have been subject to mining activities dating back to the Roman era. In the 1800s and the early 1900s, several small copper mines were in production and mining for arsenopyrite was carried out during World War II.

Modern exploration commenced in the 1970s at Carlés. Sporadic drilling and sampling programs through the 1970s and 1980s gave way to underground exploration in 1990. Further drilling and engineering work by Río Narcea culminated in the start of production at Boinás West Pit in 1997, followed by Boinás East Pit, and El Valle Pit. Open pit mining from 1997 to 2003 produced approximately 4.9 Mt, containing approximately 916,000 ounces of gold.

Underground production began in 2003 at Carlés and 2004 at Boinás. Underground operations ceased in 2006 due to rising costs, lack of mill feed, and excessive dilution.

## GEOLOGY AND MINERALIZATION

The Río Narcea Gold Belt is located in the western portion of the Cantabrian Zone in the northwestern part of the Hercynian-age Iberian Massif. The Cantabrian Zone and the nearby West Asturian-Leonese Zone consist of a stratigraphic section of Paleozoic sedimentary rocks that range in age from Middle Cambrian to Permian. The lower stratigraphic section of the Cantabrian Zone includes the Láncara Formation (Cambrian limestone), which is underlain by Cambrian feldspathic sandstone. The limestone has a total thickness of approximately 250 m and constitutes the principal host rock for gold and copper mineralization at El Valle-Boinás.

The 45 km long and four-kilometre-wide Río Narcea Gold Belt is characterized by the alignment of mineral occurrences, Paleozoic sediments, Tertiary Basins, fracture zones, and igneous intrusions. The most important igneous intrusions, from north to south, are the Ortosa-Godán, Carlés, Pando, La Brueva, Villaverde-Pontigo, and El Valle-Boinás intrusives.

Metamorphism in the Río Narcea Gold Belt is related only to intrusion of the igneous rocks, which produced contact metamorphism in the sedimentary rocks. They produce hornfels in the clastic units and skarn in the carbonate units.

Gold mineralization in the Río Narcea Gold Belt consists mainly of two types:

- **Gold-bearing copper skarn:** related to the interaction between late Hercynian intrusions, mesothermal solutions, and carbonate host rocks. This is the primary type of gold deposit that may be affected by later events (favourable host rocks for skarn include the Láncara Formation at El Valle-Boinás and the Rañeces Group Formation at Carlés).
- **Jasperoid type:** related to subvolcanic dykes and epithermal solutions which cause silicification with argillization and sericitization, plus epigenetic, hypogene oxidation. This type of mineralization may overprint, remobilize, and enrich gold mineralization within the skarn deposits, as happened at El Valle- Boinás. Also, this can form the breccia-style gold mineralization that produced higher grades at El Valle- Bionás. Limited to structural zones of varying width, they dip at high angles. They are typically the sites of leaching and enrichment that extend as much as 400 m below the surface.

## EL VALLE-BOINÁS

The gold mineralization system has a strike length of two kilometres and a width of at least 0.5 km. The intrusive is elongated trending N35°E with a length of 500 m, and an average thickness of 300 m. A copper-mineralization and that the resource model is reasonable and acceptable to support the updated 2014 Mineral Resource and Mineral Reserve estimates.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other modifying factors that could materially affect the Mineral Resource and Mineral Reserve estimates.

gold mesothermal skarn was developed mainly along the contact between the igneous rock and the carbonate unit.

## CARLÉS

The Carlés deposit is a gold and copper bearing skarn developed predominantly in the Devonian limestones of the lower portion of the Rañeces Formation along the north margin of the Carlés granodiorite. The Carlés intrusion is approximately circular in plan with a diameter of about 750 m.

Mineralization is continuous for over 1,000 m. It ranges in thickness from 1.5 m to over 25 m, dipping 50° to 90° away from the granitic intrusion. The skarn is known over a vertical continuity of 400 m and remains open at depth.

## MINERAL RESOURCES

The 2014 Mineral Resource estimate for EVBC included updating seven of the 20 block models, and the application of new cut-off grades and depletion criteria for Mineral Resource reporting purposes.

The Mineral Resources at EVBC, as of September 30, 2014 inclusive of Mineral Reserves are summarized in Table 1-1.

RPA reviewed the resource assumptions, input parameters, geological interpretation, and block modelling procedures and is of the opinion that the Mineral Resource estimate is appropriate for the style of mineralization and that the resource model is reasonable and acceptable to support the updated 2014 Mineral Resource and Mineral Reserve estimates.

RPA is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other modifying factors that could materially affect the Mineral Resource and Mineral Reserve estimates.

### Measured

| Zone          | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(t Cu) |
|---------------|--------------------|-------------------|-----------------|-------------------|-----------------------------------|------------------------------|
| Boinás Oxides | 638                | 4.42              | 1.05            | 25.01             | 91                                | 6,703                        |
| Boinás Skarn  | 666                | 2.79              | 0.78            | 16.58             | 60                                | 5,194                        |
| Carlés        | 38                 | 4.55              | 0.68            | 5.26              | 6                                 | 259                          |
| <b>Total</b>  | <b>1,342</b>       | <b>3.62</b>       | <b>0.91</b>     | <b>20.27</b>      | <b>156</b>                        | <b>12,216</b>                |

### Indicated

| Zone          | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(t Cu) |
|---------------|--------------------|-------------------|-----------------|-------------------|-----------------------------------|------------------------------|
| Boinás Oxides | 1,835              | 6.76              | 0.80            | 13.47             | 399                               | 14,681                       |
| Boinás Skarn  | 1,770              | 3.16              | 0.58            | 14.40             | 180                               | 10,264                       |
| Carlés        | 1,059              | 3.40              | 0.41            | 6.22              | 116                               | 4,343                        |
| <b>Total</b>  | <b>4,664</b>       | <b>4.63</b>       | <b>0.63</b>     | <b>12.18</b>      | <b>694.7</b>                      | <b>29,382</b>                |

**Measured + Indicated**

| <b>Zone</b>   | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> |
|---------------|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|
| Boinás Oxides | 2,474                      | 6.16                      | 0.86                    | 16.45                     | 490  | 21,272                                |
| Boinás Skarn  | 2,435                      | 3.06                      | 0.64                    | 14.99                     | 240  | 15,587                                |
| Carlés        | 1,097                      | 3.44                      | 0.42                    | 6.19                      | 121  | 4,608                                 |
| <b>Total</b>  | <b>6,006</b>               | <b>4.41</b>               | <b>0.69</b>             | <b>13.98</b>              | <b>851</b>                                 | <b>41,443</b>                         |

**Inferred**

| <b>Zone</b>   | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> |
|---------------|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|
| Boinás Oxides | 2,499                      | 7.16                      | 0.46                    | 3.63                      | 575  | 11,495                                |
| Boinás Skarn  | 2,135                      | 3.35                      | 0.45                    | 12.27                     | 230  | 9,609                                 |
| Carlés        | 1,393                      | 3.90                      | 0.43                    | 4.12                      | 175  | 5,988                                 |
| <b>Total</b>  | <b>6,027</b>               | <b>5.05</b>               | <b>0.45</b>             | <b>6.80</b>               | <b>980</b>                                 | <b>27,121</b>                         |

**Notes:**

1. CIM definitions were followed for Mineral Resources.
2. Mineral Resources are estimated at an Au equivalent cut-off grade of 3.8 g/t for Boinás oxide, 2.5 g/t for Boinás Skarn and 2.3 g/t for Carlés Skarn.
3. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, copper price of US\$3.10 per pound and a silver price of US\$23 per ounce. A Euro/USD exchange rate of 1/1.33 was used.
4. Mineral Resources are inclusive of Mineral Reserves
5. A crown pillar of 10 m is excluded from the Mineral Resource below the El Valle open pit.
6. Unrecoverable material in exploited mining areas has been excluded from the Mineral Resource.
7. Numbers may not add due to rounding

## MINERAL RESERVES

Mineral Reserves were estimated by RPA, in conjunction with EVBC personnel, based on mine designs applied to Measured and Indicated Resources, with dilution and extraction factors applied. Areas where stopes above cut-off grade were isolated were removed from the estimate. Stopes planned for mining up to September 30, 2014 were excluded. Mineral Reserves are summarized in Table 1-2.

**TABLE 1-2 MINERAL RESERVES – SEPTEMBER 30, 2014**  
**Orvana Minerals Corp. – El Valle Boinás – Carlés Operation**

| Category                       | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained Metal<br>(000 oz Au) | Contained<br>Metal<br>(t Cu) |
|--------------------------------|--------------------|-------------------|-----------------|-------------------|--------------------------------|------------------------------|
| Proven                         | 467                | 3.36              | 0.96            | 20.33             | 50                             | 4,484                        |
| Probable                       | 1,722              | 4.54              | 0.59            | 11.54             | 252                            | 10,193                       |
| <b>Proven and<br/>Probable</b> | <b>2,189</b>       | <b>4.29</b>       | <b>0.67</b>     | <b>13.41</b>      | <b>302</b>                     | <b>14,677</b>                |

**Notes:**

1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated using gold equivalent cut-off grades by zone, consisting of 4.5 g/t AuEq for Boinás Oxides, 2.9 g/t AuEq for Boinás Skarns, and 2.8 g/t AuEq for Carlés. Gold equivalent cut-offs were calculated using recent operating results for recoveries, off-site concentrate costs, and on-site operating costs.
3. Mineral Reserves are estimated using average long-term prices of US\$1,100 per ounce gold, US\$2.75 per lb copper, and US\$20 per ounce silver. A Euro/USD exchange rate of 1/1.33 was used.
4. A minimum mining width of 4 m was used.
5. Numbers may not add due to rounding.

## MINING METHODS

The current mining methods used at Boinás Mine are overhand drift and fill, and transverse longhole stoping. Due to decreasing thickness of the remaining Boinás skarns, RPA changed the design of the longhole mining from transverse to longitudinal where appropriate. Drift and fill mining will continue to be used in the oxide areas of the mine. Ore is hauled to surface via ramp and/or skipped via shaft, depending on location and ore type. Backfill is placed by truck and scoop, consisting of cemented rock fill or waste fill, as appropriate to the mining sequence and geotechnical demands.

Carlés Mine uses longitudinal longhole stoping methods. Ore is hauled to a surface stockpile via underground truck, and transferred to highway-rated surface trucks for transport to Boinás. Backfill is via waste fill, as stopes are separated by rib pillars.

The LOMP is currently a five year plan. The first three years are at full production with a reduction in production during the last two years as shown in Table 1-3. Carlés Mine will be placed on care and maintenance in early 2015, pending future increases in metal prices, new results from exploration, or determination of an economic mining method, such as conventional narrow vein mining.



**TABLE 1-3 LIFE OF MINE PLAN**  
**Orvana Minerals Corp. – El Valle Boinás – Carlés Operation**

| Item                    | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 | Total         |
|-------------------------|---------|---------|---------|---------|---------|---------------|
| <b>Mill Feed</b>        |         |         |         |         |         |               |
| Tonnes ('000)           | 618     | 547     | 547     | 311     | 174     | <b>2,198</b>  |
| Au (g/t)                | 4.01    | 4.06    | 4.67    | 4.68    | 4.51    | <b>4.32</b>   |
| Cu (%)                  | 0.73    | 0.57    | 0.41    | 0.91    | 1.27    | <b>0.68</b>   |
| Ag (g/t)                | 13.86   | 11.61   | 9.65    | 18.98   | 21.31   | <b>13.57</b>  |
| <b>Metal Production</b> |         |         |         |         |         |               |
| Au (koz)                | 74      | 66      | 76      | 43      | 23      | <b>282</b>    |
| Cu (tonnes)             | 3,656   | 2,693   | 1,624   | 1,708   | 1,320   | <b>11,000</b> |
| Ag (koz)                | 220     | 163     | 136     | 152     | 95      | <b>767</b>    |

## MINERAL PROCESSING

The EVBC Operation processing plant consists of the following sequence of macro unit operations:

- Crushing and Screening
- Grinding and Cycloning
- Gravity Concentration
- Flotation Concentration
- Leaching/Adsorption via carbon-in-leach (CIL) process
- Gravity Concentrate Leaching (ILIX)
- Desorption and Elution
- Electrowinning
- Smelting
- Detoxification Plant for CIL Tailings Pulp
- Tailings Storage Facility (TSF)

The processing plant has a nameplate capacity of 600,000 tpa, where subsequent expansions have enabled treatment of over 750,000 tpa depending on ore types. Overall recoveries achieved in recent operation are 92% for gold, 81% to 84% for copper, and 79% for silver. Products include doré bars and copper concentrate with gold and silver credits.

## PROJECT INFRASTRUCTURE

The EVBC Operation main infrastructure was completed in 1997 for open pit operations. The office was expanded in 2011.

Surface facilities other than the process plant include changing rooms, lunch rooms, clinic, warehouses, maintenance shops, electromechanical workshops, a shotcrete plant, a cement batch plant for backfill, a laboratory, a core storage facility, electrical power lines and substations for both mines, and a complete telecommunication system providing phone lines and fast internet and intranet connections for the various offices.

The underground workings at EVBC have auxiliary fixed installations including main and auxiliary ventilation, pumping systems, electrical distribution, and clean-water supply circuit. Also included are mine and surface treatment circuits, drainage, and water decant ponds. A 420 m shaft at Boinás is again operational after recent repairs.

The tailings impoundment is located within the El Valle pit and is properly lined and has an adequate pumping system. The plant-tailings circuit is a no-discharge facility.

## MARKETS

The principal commodities at the EVBC Operation are freely traded, at prices that are widely known, so that

prospects for sale of any production are virtually assured, subject to achieving product specifications.

As per industry norms for copper concentrate, penalty charges are incurred for various deleterious elements when they are over specified concentrations. Fluorine specifications, however, also include a hard cap, above which the concentrate is not readily saleable.

Concentrate lots have been above this cap from time to time, and thus required blending with low-fluorine concentrate lots or negotiation with the off-take company before shipping to the smelter.

## ENVIRONMENTAL, PERMITTING AND SOCIAL CONSIDERATIONS

The EVBC Operation is permitted and bonded. Kinbauri España has obtained all material permits to operate the mines, processing plant, and tailings storage facility.

## CAPITAL AND OPERATING COST ESTIMATES

Capital cost estimates for EVBC are based on the LOMP. The sustaining capital costs total \$43 million, including mine development (contractor and company), mine infrastructure, equipment costs, plant costs, and tailings management.

In addition to sustaining capital costs, a budget of \$20.1 million for reclamation and closure is included. This estimate includes installation and operation of a post-closure water treatment plant, and decommissioning costs.

Operating costs in the LOMP are based on recent operating history, and average approximately \$70 million per year for the next three years. After that, costs decline due to lower production forecasts. Unit rates are summarized in Table 1-4:

**TABLE 1-4 UNIT OPERATING COSTS**  
Orvana Minerals Corp. – El Valle Boinás - Carlés Operation

| Item         | Units              | LOMP Average |
|--------------|--------------------|--------------|
| Mining       | \$/t milled        | 70           |
| Processing   | \$/t milled        | 24           |
| G&A          | \$/t milled        | 38           |
| <b>Total</b> | <b>\$/t milled</b> | <b>131</b>   |

## Don Mario Mine

The following is the summary section of the Don Mario Mine 43-101 Report entitled “Don Mario Mine Operation 2016 *Technical Report*” dated January 27, 2017 (effective date September 30, 2016) prepared by Qualified Person, Gino Zandonai, M.Sc., C.P., Mining Engineer of DCGS Exploration and Mining Consulting. The full text of the Don Mario Mine 43-101 Report is available for viewing on SEDAR at [www.sedar.com](http://www.sedar.com) and is incorporated by reference in this AIF. Defined terms and abbreviations used herein and not otherwise defined shall have the meanings ascribed to such terms in the Don Mario Mine 43-101 Report.

### Summary Executive Summary

DGCS SA (“DGCS”) was retained by Orvana Minerals Corp. (“Orvana”) to prepare an update of the technical report in accordance with National Instrument 43-101 (“NI43-101”) for the EMIPA S.A. – Don Mario operation (“Don Mario” or the “Don Mario Operation” or the “Project”) located in the San Juan Canton, Chiquitos Province of eastern Bolivia, in the department of Santa Cruz, and specifically the last NI43-101 report dated November 14, 2015 prepared by Mercator Geological Services Limited (“Mercator”) and DGCS (“Mercator (2015)”). The purpose of this report is to update mineral resource and mineral reserve statements for the total Don Mario Operation and to support the upgrade of mineral resources to mineral reserves at the Lower Mineralized Zone (“LMZ”) as at September 30, 2016.

The Don Mario operation currently consists of the exploitation of the Upper Mineralized Zone (“UMZ”) and the LMZ units by open pit that produces a nominal 2,500 tonnes per day of ore of two material types – transitional and sulphides. A gravity-flotation processing plant located at Don Mario produces gold concentrate, copper concentrate with gold and silver credits and a limited amount of lead concentrate. Total production for the fiscal year ending September 30, 2016 was approximately 21,102 ounces of gold, 10.5 million pounds of copper and 381,523 ounces of silver

At September 30, 2016 total mineral resources for the Don Mario Operation, inclusive of reserves, is presented in Table 1.1 below. Total stockpile resources at the same date are presented in Table 1.2 below. Total in-situ mineral reserves for the Don Mario Operation at September 30, 2016 are presented in Table 1-3. Total stockpile reserves at the same date are presented in Table 1.4 below. Mineral reserve estimates reflect remaining depleted reserves from those reported in 2015 by Mercator (2015) and the addition of the upgraded mineral resources to reserves from the LMZ.

**Table 1.1:**

**Don Mario Total In-situ Mineral Resources Inclusive of Mineral Reserves September 30, 2016**

| Zone         | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Measured        |                   |             | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(t Cu) | Contained<br>Metal<br>(000 oz Ag) |
|--------------|--------------------|-------------------|-----------------|-------------------|-------------|-----------------------------------|------------------------------|-----------------------------------|
|              |                    |                   | Grade<br>(% Cu) | Grade<br>(g/t Ag) |             |                                   |                              |                                   |
| UMZ          | 51                 | 1.35              | 1.10            | 30.70             | 2.2         | 563.1                             | 50.3                         |                                   |
| LMZ          | 0                  | 0.00              | 0.00            | 0.00              | 0.0         | 0.0                               | 0.0                          |                                   |
| CerroFelix   | 0                  | 0.00              | 0.00            | 0.00              | 0.0         | 0.0                               | 0.0                          |                                   |
| <b>Total</b> | <b>51</b>          | <b>1.35</b>       | <b>1.10</b>     | <b>30.70</b>      | <b>2.21</b> | <b>563.1</b>                      | <b>50.3</b>                  |                                   |

### Indicated

| Zone         | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(t Cu) | Contained<br>Metal<br>(000 oz Ag) |
|--------------|--------------------|-------------------|-----------------|-------------------|-----------------------------------|------------------------------|-----------------------------------|
| UMZ          |                    | (g/t Au)          | (% Cu)          | (g/t Ag)          | (000 oz Au)                       | (t Cu)                       | (000 oz Ag)                       |
| LMZ          | 793                | 2.62              | 0.60            | 5.94              | 66.8                              | 4,794.6                      | 151.4                             |
| CerroFelix   | 490                | 3.15              | 0.09            | 2.53              | 49.6                              | 441.0                        | 39.9                              |
| <b>Total</b> | <b>1,283</b>       | <b>2.82</b>       | <b>0.41</b>     | <b>4.64</b>       | <b>116.5</b>                      | <b>5,235.6</b>               | <b>191.2</b>                      |

### Measured + Indicated

| Zone         | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(t Cu) | Contained<br>Metal<br>(000 oz Ag) |
|--------------|--------------------|-------------------|-----------------|-------------------|-----------------------------------|------------------------------|-----------------------------------|
| UMZ          | 51                 | 1.35              | 1.10            | 30.70             | 2.2                               | 563.1                        | 0.0                               |
| LMZ          | 793                | 2.62              | 0.60            | 5.94              | 66.8                              | 4,794.6                      | 151.4                             |
| CerroFelix   | 490                | 3.15              | 0.09            | 2.53              | 49.6                              | 441.0                        | 39.9                              |
| <b>Total</b> | <b>1,334</b>       | <b>2.77</b>       | <b>0.43</b>     | <b>5.63</b>       | <b>118.67</b>                     | <b>5,798.7</b>               | <b>191.2</b>                      |

### Inferred

| Zone         | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) | Contained<br>Metal<br>(000 oz Au) | Contained<br>Metal<br>(t Cu) | Contained<br>Metal<br>(000 oz Ag) |
|--------------|--------------------|-------------------|-----------------|-------------------|-----------------------------------|------------------------------|-----------------------------------|
| UMZ          | 0                  | 0.00              | 0.00            | 0.00              | 0.0                               | 0.0                          | 0.0                               |
| LMZ          | 0                  | 0.00              | 0.00            | 0.00              | 0.0                               | 0.0                          | 0.0                               |
| CerroFelix   | 80                 | 3.14              | 0.14            | 3.21              | 8.1                               | 112.0                        | 8.3                               |
| <b>Total</b> | <b>80</b>          | <b>3.14</b>       | <b>0.14</b>     | <b>3.21</b>       | <b>8.08</b>                       | <b>112.0</b>                 | <b>8.3</b>                        |

#### **Notes** applicable to LMZ and Cerro Felix mineral resource estimates

- CIM definitions were followed for Mineral Resources and were prepared in Mercator (2015). An average block density factor of 2.89 was applied for both estimates.
- Mineral resources are considered to have reasonable expectation for economic development using open-pit mining methods based on the deposit history, resource amount and metal grades and current metal pricing.
- Mineral resources that are not mineral reserves do not have demonstrated economic viability. The quantity and grade of reported inferred mineral resources in this estimation are uncertain in nature and there has been insufficient exploration to define these inferred mineral resources as indicated or measured mineral resources; it is uncertain if further exploration will result in upgrading of inferred resources to indicated or measured status.
- Tonnes are rounded to nearest 10,000.
- Ounces are rounded to the nearest 1,000 and pounds are rounded to the nearest 10,000. Calculated contained metal sums may not match reported tonnes and grade due to rounding.
- The resource estimate cut-off value is 0.70 g/t Au is reflective of open-pit mining methods, a long-term gold price of US\$1,300 per ounce, copper price of US\$3.00 per pound and a silver price of US\$18 per ounce.
- Both resource estimates are based on validated core drilling program results and do not incorporate production sampling data.
- Contained copper tonnes were calculated from original resource statement pound values by the factor 2204.62lb/tonne.
- Numbers may not add due to rounding CIM definitions were followed.
- Notes applicable to UMZ mineral resource estimate

11. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai (2013), a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
12. Mineral Resources are estimated at a Cu equivalent cut-off grade of 0.85% for the UMZ.
13. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, copper price of US\$3.00 per pound and a silver price of US\$18 per ounce.
14. Mineral Resources are inclusive of Mineral Reserves.
15. Mineral Resources contained in stockpiles are exclusive of In-situ Mineral Resources. Numbers may not add due to rounding.

**Table 1.2:**

**Summary Statement of Don Mario Stockpile Mineral Resources (exclusive of in-situ)  
September 30, 2016**

| <b>Measured</b>        |                            |                           |                         |                           |  |                                       |  |
|------------------------|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Location/Zone</b>   | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| DM1 Oxide              | 492                        | 2.24                      | 1.74                    | 54.4                      | 35.4                                       | 8559.6                                | 861.0                                      |
| DM2 (Oxide Pre-strip)  | 278                        | 1.90                      | 1.98                    | 17.9                      | 17.0                                       | 5508.8                                | 160.5                                      |
| DM3 (Dolomite Oxide)   | 190                        | 1.89                      | 1.96                    | 21.6                      | 11.5                                       | 3724.0                                | 132.1                                      |
| Plant Stockpile Oxide) | 515                        | 1.61                      | 1.57                    | 57.8                      | 26.7                                       | 8108.3                                | 958.3                                      |
| DM4 Stock Talco        | 506                        | 1.61                      | 2.38                    | 63.5                      | 26.2                                       | 12067.4                               | 1033.2                                     |
| DM5 (Dolomite Oxide)   | 202                        | 1.86                      | 1.64                    | 48.7                      | 12.1                                       | 3314.4                                | 316.2                                      |
| DM6 (Tremolite Oxide)  |                            |                           |                         |                           |  |                                       |  |
| <b>Total</b>           | <b>2184</b>                | <b>1.84</b>               | <b>1.89</b>             | <b>49.3</b>               | <b>129.0</b>                               | <b>41282.6</b>                        | <b>3461.2</b>                              |

All these stocks will be processed by Flotation and will not be included in the CIL process

**Notes to UMZ stockpile mineral resources:**

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Resources are estimated at a Cu equivalent cut-off grade of 0.85% for the Stockpiles of the UMZ.
3. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, copper price of US\$3.00 per pound and a silver price of US\$18 per ounce.
4. Mineral Resources contained in stockpiles are exclusive of In-situ Mineral Resources. Mineral Resources that are not mineral reserves do not have demonstrated economic viability. The UMZ Oxide Stockpile resources are currently not economically viable to process through the gravity flotation plant.
5. Numbers may not add due to rounding.

**Table 1.3:****In-situ Mineral Reserves  
September 30, 2016**

| <b>Proven</b> |                            |                           |                         |                           |  |                                       |  |
|---------------|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Zone</b>   | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| UMZ           | 51                         | 1.35                      | 1.10                    | 30.70                     | 2.2  | 563.1                                 | 50.3                                       |
| LMZ           | 0                          | 0.00                      | 0.00                    | 0.00                      | 0.0  | 0.0                                   | 0.0  |
| CerroFelix    | 0                          | 0.00                      | 0.00                    | 0.00                      | 0.0  | 0.0                                   | 0.0  |
| <b>Total</b>  | <b>51</b>                  | <b>1.35</b>               | <b>1.10</b>             | <b>30.70</b>              | <b>2.21</b>                                | <b>563.1</b>                          | <b>50.3</b>                                |

| <b>Probable</b> |                            |                           |                         |                           |  |                                       |  |
|-----------------|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Zone</b>     | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| UMZ             | 0                          | 0                         | 0                       | 0                         | 0  | 0                                     | 0  |
| LMZ             | 793                        | 2.62                      | 0.60                    | 5.94                      | 66.8                                       | 4794.6                                | 151.4                                      |
| <b>Total</b>    | <b>793</b>                 | <b>2.62</b>               | <b>0.60</b>             | <b>5.94</b>               | <b>66.8</b>                                | <b>4794.6</b>                         | <b>151.4</b>                               |

| <b>Total Proven and Probable</b> |                            |                           |                         |                           |  |                                       |  |
|----------------------------------|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Zone</b>                      | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| Proven                           | 51                         | 1.35                      | 1.10                    | 30.70                     | 2.2  | 563.1                                 | 50.3                                       |
| Probable                         | 793                        | 2.62                      | 0.60                    | 5.94                      | 66.8                                       | 4794.6                                | 151.4                                      |
| <b>Proven &amp;<br/>Probable</b> | <b>844</b>                 | <b>2.54</b>               | <b>0.63</b>             | <b>7.43</b>               | <b>69.0</b>                                | <b>5357.7</b>                         | <b>201.7</b>                               |

**Notes:**

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Reserves are estimated using copper equivalent cut-off grade of 1.0% CuEq for the UMZ and cut-off grade of 0.70g/t AU for the LMZ. Cut-offs were calculated using recent operating results for recoveries, off-site concentrate costs, and on-site operating costs.
3. Mineral Reserves are estimated using average long-term prices of US\$1,100 per ounce, copper price of US\$2.75 per pound and a silver price of US\$16.5 per ounce.
4. Numbers may not add due to rounding.
5. The mineral reserves at the LMZ have been based on processing by the CIL and flotation methods.

Certain material mined was transported to the waste dump or various stockpile locations. Certain oxide, transitional and sulphide materials that were above the specified cut-off grades were classified as either stockpile mineral resources or stockpile mineral reserves. A summary of the mineral reserves stockpile estimates completed as part of the Company's annual mineral reserve and resource estimates update process is provided in the Table 1.4 below.

**Table 1.4:**

| <b>Stockpile Mineral Reserves (exclusive of in-situ)<br/>September 30, 2016</b> |                            |                           |                         |                           |  |                                       |  |
|---|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Proven</b>   |                            |                           |                         |                           |  |                                       |  |
| <b>Location/Zone</b>  | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| DM1 OS (Trans+Sulph)  | 8                          | 1.93                      | 1.10                    | 27.63                     | 0.5  | 88.4                                  | 7.1  |
| Plant Deposit (DPL2)  | 26                         | 1.33                      | 0.99                    | 16.32                     | 1.1  | 255.1                                 | 13.5                                       |
| Plant Pushback LMZ  | 19                         | 0.70                      | 2.06                    | 5.08                      | 0.4  | 382.3                                 | 3.0  |
| UMZ Tremolita Talco   | 160                        | 2.18                      | 1.65                    | 16.90                     | 11.2                                       | 2648.2                                | 87.0                                       |
| <b>Total</b>  | <b>212</b>                 | <b>1.94</b>               | <b>1.59</b>             | <b>16.10</b>              | <b>13.2</b>                                | <b>3374.1</b>                         | <b>110.6</b>                               |

**Notes:**

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Reserves are estimated using a copper equivalent cut-off grade of 1.0% CuEq. Copper equivalent cut-offs were calculated using recent operating results for recoveries, off-site concentrate costs, and on-site operating costs.
3. Mineral Reserves are estimated using average long-term prices of US\$1,100 per ounce, copper price of US\$2.75 per pound and a silver price of US\$16.5 per ounce.
4. Numbers may not add due to rounding.
5. UMZ stock for processing by Flotation
6. LMZ Stock for processing by CIL
7. UMZ Tremolita, upgrade to reserve from resource stock pile. It is possible to process by flotation.

**Technical Summary**Property Description and Location

The Don Mario mine is located within the San Juan Canton, Chiquitos Province, Santa Cruz Department in Eastern Bolivia, about 380 km east of the departmental capital of Santa Cruz de la Sierra. Orvana currently operates the mine through its wholly owned subsidiary, Empresa Paititi S.A. (EMIPA, or EMIPA S.A.). The operation commenced commercial production in July of 2003 through mining at the LMZ underground mine and in April 2011 production transitioned to open pit mining of the overlying UMZ deposit. Commercial production of the UMZ was achieved in January 2012 is being phased out and replaced with production from the LMZ upper extension. The Don Mario property consists of 10 contiguous mineral concessions covering approximately 58,325 ha.

Existing Infrastructure

Surface and underground infrastructure at the Don Mario Operation include the following:

- A 2,500 tpd processing facility
- A tailings storage facility (TSF) and freshwater dam
- Modern 300 person camp facility, consisting of sleeping accommodation (both single, double and multiple occupancy types), recreation facilities, kitchens and lunch rooms.
- Shops, offices and warehouse facilities
- On site natural gas power plant and substation

- De-commissioned sulphuric acid plant
- Carbon in leach (“CIL”) circuit which is being recommissioned (the “CIL Project”)
- A decline and a series of ramp-connected levels used to access the historic LMZ underground mine

### History

Cerro Pelado, also referred to as Cerro Don Mario, is the prominent hill formed by the Don Mario UMZ deposit. This location is known to be an ancient site of mining for oxidized copper mineralization. Following the discovery of gold at the site in 1991, the area was sequentially explored by three main companies, these being La Rossa, Billiton Limited and Orvana. This resulted in the discovery and/or delineation of the LMZ, CF and Las Tojas (“LT”) Au-Cu deposits and the UMZ Cu-Au deposit, plus several other prospects within 20 km of the mine site. Orvana acquired the property in 1996 from four Bolivian companies that jointly owned the Don Mario concessions in eastern Bolivia and initiated LMZ deposit mining in 2003. Underground mining of the LMZ deposit ceased in 2009 and was replaced by open pit production from the UMZ deposit, augmented by lesser open pit production from the LT and CF deposits. Orvana reported mineral resource estimates at September 30, 2015 at the upper extension of the LMZ and CF and at September 30, 2016 the mineral resources at the upper extension of the LMZ were upgraded to mineral reserves by DGCS. The depleting UMZ is being phased out and replaced with production from the LMZ upper extension

### Geology and Mineralization

The Don Mario property is underlain by Lower to Middle Proterozoic metamorphic rocks of the Cristal Sequence that comprise a portion of the Bolivian Shield’s Adventura Complex. The Cristal Sequence is composed of medium to high grade metasedimentary units such as biotite schist, mica schist, quartzite, biotite–plagioclase gneiss and calcsilicates gneiss, as well as lesser amounts of pegmatite and amphibolite dikes. The Cristal Schist belt subunit hosts the Don Mario mine’s Upper and Lower Mineralized Zones as well as the nearby CF, Don Mario North, and Don Mario South gold prospects (Wright et al., 2009).

Mining and exploration programs to date on the property have shown the Don Mario deposit to consist of the gold-enriched LMZ and the copper-enriched UMZ. The LMZ is characterized by a well-developed northwest striking and steeply northeast dipping structural/lithologic corridor that constrains gold-copper-silver mineralization as well as distinctive alteration assemblages. Alteration associated with gold-copper-silver mineralization commonly takes the form of iron carbonate, white mica, biotite, quartz, albite, andalusite, staurolite, garnet, cordierite, gedrite and anthophyllite-cummingtonite. Spatial disposition of the LMZ and UMZ deposits may be of structural derivation, with the calc- silicate dominated and synclinally folded UMZ host sequence representing a shearing- associated “flower structure” above the sheared LMZ.

Past workers have characterized mineralization at the Don Mario deposit as being structurally focused or shear zone related. However, as outlined by Wright et al. (2009), alternative views on deposit genesis include skarn association, banded iron formation-hosted structural association, and deformed, syngenetic massive sulphide association,. In contrast to these, the deposit was more recently classified by Arce Burgoa (2009) as being a deformed example of the Iron Ore copper Gold (IOCG) association.

### Mineral Resources

The 2016 mineral resource statement of Don Mario includes mineral from the UMZ, LMZ and CF.

LMZ and CF mineral resources were estimated in Mercator (2015) and have been updated in this report, accounting for production depletion from September 30, 2015 to September 30, 2016. The LMZ and Cerro Felix mineral resource estimates, inclusive of mineral reserves, as at September 30, 2016 appear in Tables 1.5 and 1.6. Remaining UMZ mineral resources were estimated by DGCS at September 30, 2013 and have been updated in this report as at September 30, 2016, accounting for production depletion. The UMZ mineral resource estimates, inclusive of mineral reserves, appear in Table 1.7 and 1.8 respectively.



**Table 1.5:**

| <b>Don Mario LMZ Deposit In-situ Mineral Resources Inclusive of Mineral Reserves<br/>September 30, 2016</b> |                 |               |                 |               |                 |
|---|-----------------|---------------|-----------------|---------------|-----------------|
| <b>Proven</b>   |                 |               |                 |               |                 |
| <b>Au (g/t) Cut-off</b>   | <b>Category</b> | <b>Tonnes</b> | <b>Au (g/t)</b> | <b>Cu (%)</b> | <b>Ag (g/t)</b> |
| 0.70  | Indicated       | 793,000       | 2.62            | 0.60          | 5.94            |

See notes table 1.6

**Table 1.6:**

| <b>Don Mario Cerro Felix In-situ Mineral Resources Inclusive of Mineral Reserves<br/>September 30, 2016</b> |                 |               |                 |               |                 |
|---|-----------------|---------------|-----------------|---------------|-----------------|
| <b>Proven</b>   |                 |               |                 |               |                 |
| <b>Au (g/t) Cut-off</b>   | <b>Category</b> | <b>Tonnes</b> | <b>Au (g/t)</b> | <b>Cu (%)</b> | <b>Ag (g/t)</b> |
| 0.70  | Indicated       | 490,000       | 3.15            | 0.09          | 2.53            |
|   | Inferred        | 80,000        | 3.14            | 0.14          | 3.21            |

**Notes:** Applicable to both LMZ and CF mineral resource estimates.

1. CIM definitions were followed for Mineral Resources and were prepared in Mercator (2015).
2. An average block density factor of 2.89 was applied for both estimates.
3. Mineral resources are considered to have reasonable expectation for economic development using open-pit mining methods based on the deposit history, resource amount and metal grades and current metal pricing.
4. Mineral resources that are not mineral reserves do not have demonstrated economic viability. The quantity and grade of reported inferred mineral resources in this estimation are uncertain in nature and there has been insufficient exploration to define these inferred mineral resources as indicated or measured mineral resources; it is uncertain if further exploration will result in upgrading of inferred resources to indicated or measured status.
5. Tonnes are rounded to nearest 10,000.
6. Ounces are rounded to the nearest 1,000 and pounds are rounded to the nearest 10,000. Calculated contained metal sums may not match reported tonnes and grade due to rounding.
7. The resource estimate cut-off value is 0.70 g/t Au is reflective of open-pit mining methods, a long-term gold price of US\$1,300 per ounce, copper price of US\$3.00 per pound and a silver price of US\$18 per ounce.
8. Both resource estimates are based on validated core drilling program results and do not incorporate production sampling data..
9. Contained copper tonnes were calculated from original resource statement pound values by the factor 2204.62lb/tonne.
10. Numbers may not add due to rounding
11. CIM definitions were followed.

**Table 1.7:**

| <b>UMZ Deposit In-situ Mineral Resources Inclusive of Mineral Reserves<br/>September 30, 2016</b> |                            |                           |                         |                           |  |                                       |  |
|---|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Measured</b>   |                            |                           |                         |                           |  |                                       |  |
| <b>Zone</b>   | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| UMZ   | 51                         | 1.35                      | 1.10                    | 30.70                     | 2.2  | 563.1                                 | 50.3                                       |
| <b>Total</b>  | <b>51</b>                  | <b>1.35</b>               | <b>1.10</b>             | <b>30.70</b>              | <b>2.2</b>                                 | <b>563.1</b>                          | <b>50.3</b>                                |

**Notes:**

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai (2013), a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Resources are estimated at a Cu equivalent cut-off grade of 0.85% for the UMZ.
3. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, copper price of US\$3.00 per pound and a silver price of US\$18 per ounce.
4. Mineral Resources are inclusive of Mineral Reserves.
5. Mineral Resources contained in stockpiles are exclusive of In-situ Mineral Resources.
6. Numbers may not add due to rounding.

**Table 1.8:**

| <b>Stockpile Mineral Resources Exclusive of In-situ Mineral Resources<br/>September 30, 2016</b> |                            |                           |                         |                           |  |                                       |  |
|--|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Measured</b>  |                            |                           |                         |                           |  |                                       |  |
| <b>Location/Zone</b>   | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| DM1 Oxide  | 492                        | 2.24                      | 1.74                    | 54.4                      | 35.4                                       | 8559.6                                | 861.0                                      |
| DM2 (Oxide Pre-strip)  | 278                        | 1.90                      | 1.98                    | 17.9                      | 17.0                                       | 5508.8                                | 160.5                                      |
| DM3 (Dolomite Oxide)   | 190                        | 1.89                      | 1.96                    | 21.6                      | 11.5                                       | 3724.0                                | 132.1                                      |
| Plant Stockpile Oxide)   | 515                        | 1.61                      | 1.57                    | 57.8                      | 26.7                                       | 8108.3                                | 958.3                                      |
| DM4 Stock Talco  | 506                        | 1.61                      | 2.38                    | 63.5                      | 26.2                                       | 12067.4                               | 1033.2                                     |
| DM5 (Dolomite Oxide)   | 202                        | 1.86                      | 1.64                    | 48.7                      | 12.1                                       | 3314.4                                | 316.2                                      |
| DM6 (Tremolite Oxide)  |                            |                           |                         |                           |  |                                       |  |
| <b>Total</b>   | <b>2184</b>                | <b>1.84</b>               | <b>1.89</b>             | <b>49.3</b>               | <b>129.0</b>                               | <b>41282.6</b>                        | <b>3461.2</b>                              |

All these stocks will be processed by for Flotation and will not be included in the CIL process Notes:

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Resources are estimated at a Cu equivalent cut-off grade of 0.85% for the Stockpiles of the UMZ.

3. Mineral Resources are estimated using a long-term gold price of US\$1,300 per ounce, copper price of US\$3.00 per pound and a silver price of US\$18 per ounce.
4. Mineral Resources contained in stockpiles are exclusive of In-situ Mineral Resources. Mineral Resources that are not mineral reserves do not have demonstrated economic viability. The UMZ Oxide Stockpile resources are currently not economically viable to process through the gravity flotation plant.
5. Numbers may not add due to rounding.

### Mineral Reserves

Mineral resources identified as measured and indicated within the final pit that can be mined and processed economically are classified as proven and probable reserves.

Mineral Reserves for the UMZ deposit were last estimated by DGCS and are documented in the associated Zandonai (2013) NI43-101 technical report. Reserves reflect pit optimization work completed by Cube Consulting Ltd. (Cube) plus dilution and extraction modifying factors applied to measured and indicated resources. After depleting 2014, 2015 and 2016 production from the 2013 reserves, DGCS has estimated remaining in-situ and stockpile mineral reserves at September 30, 2016 to be as presented below in Tables 1.9 and 1.10.

Mineral resources of the LMZ deposit were last estimated by Mercator (2015) and upgraded to reserves in this report. LMZ mineral reserves are presented in Table 1.9.

**Table 1.9:**

| <b>In-situ Mineral Reserves<br/>September 30, 2016</b> |                            |                           |                         |                           |  |                                       |  |
|--|----------------------------|---------------------------|-------------------------|---------------------------|--|---------------------------------------|--|
| <b>Total Proven and Probable</b>                       |                            |                           |                         |                           |  |                                       |  |
| <b>Zone</b>  | <b>Tonnage<br/>(000 t)</b> | <b>Grade<br/>(g/t Au)</b> | <b>Grade<br/>(% Cu)</b> | <b>Grade<br/>(g/t Ag)</b> | <b>Contained<br/>Metal<br/>(000 oz Au)</b> | <b>Contained<br/>Metal<br/>(t Cu)</b> | <b>Contained<br/>Metal<br/>(000 oz Ag)</b> |
| Proven (UMZ)   | 51                         | 1.35                      | 1.10                    | 30.70                     | 2.2  | 563.1                                 | 50.3                                       |
| Probable (LMZ)   | 793                        | 2.62                      | 0.60                    | 5.94                      | 66.8                                       | 4794.6                                | 151.4                                      |
| <b>Proven &amp;<br/>Probable</b>                       | <b>844</b>                 | <b>2.54</b>               | <b>0.63</b>             | <b>7.43</b>               | <b>69.0</b>                                | <b>5357.7</b>                         | <b>201.7</b>                               |

**Notes:**

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Reserves are estimated using copper equivalent cut-off grade of 1.0% CuEq for the UMZ and cut-off grade of 0.70g/t AU for the LMZ. Copper equivalent cut-offs were calculated using recent operating results for recoveries, off-site concentrate costs, and on-site operating costs.
3. Mineral Reserves are estimated using average long-term prices of US\$1,100 per ounce, copper price of US\$2.75 per pound and a silver price of US\$16.5 per ounce.
4. Numbers may not add due to rounding.
5. The mineral reserves at the LMZ have been based on processing by the CIL and flotation methods.

**Table 1.10:****Stockpile Mineral Reserves (exclusive of in-situ)  
September 30, 2016**

| Zone                   | Proven             |                   |                 |                   | Contained Metal<br>(000 oz Au) | Contained Metal<br>(t Cu) | Contained Metal<br>(000 oz Ag) |
|------------------------|--------------------|-------------------|-----------------|-------------------|--------------------------------|---------------------------|--------------------------------|
|                        | Tonnage<br>(000 t) | Grade<br>(g/t Au) | Grade<br>(% Cu) | Grade<br>(g/t Ag) |                                |                           |                                |
| Proven (UMZ)           | 8                  | 1.93              | 1.10            | 27.63             | 0.5                            | 88.4                      | 7.1                            |
| Probable (LMZ)         | 26                 | 1.33              | 0.99            | 16.32             | 1.1                            | 255.1                     | 13.5                           |
| Proven &<br>Probable   | 19                 | 0.70              | 2.06            | 5.08              | 0.4                            | 382.3                     | 3.0                            |
| UMZ Tremolita<br>Talco | 160                | 2.18              | 1.65            | 16.90             | 11.2                           | 2648.2                    | 87.0                           |
| <b>Total</b>           | <b>212</b>         | <b>1.94</b>       | <b>1.59</b>     | <b>16.10</b>      | <b>13.2</b>                    | <b>3374.1</b>             | <b>110.6</b>                   |

**Notes:**

1. CIM definitions were followed for Mineral Resources and were prepared by G. Zandonai, a qualified person for the purposes of NI43-101, who is an employee of DGCS SA and is independent of the Company.
2. Mineral Reserves are estimated using a copper equivalent cut-off grade of 1.0% CuEq. Copper equivalent cut-offs were calculated using recent operating results for recoveries, off-site concentrate costs, and on-site operating costs.
3. Mineral Reserves are estimated using average long-term prices of US\$1,100 per ounce, copper price of US\$2.75 per pound and a silver price of US\$16.5 per ounce.
4. Numbers may not add due to rounding. UMZ stock for processing by Flotation LMZ Stock for processing by CIL
5. UMZ Tremolita, upgrade to reserve from resource stock pile. It is possible to process by flotation.

Mining Methods

The current mining methods used at Don Mario UMZ are conventional open pit mining. Ore and waste are loaded into 20 to 25 tonne nominal capacity trucks using a 10 tonne nominal capacity front end loader. The ore is hauled directly to the process plant ore stockpile area and waste is hauled directly to the waste dump facility. Any oxide or low grade material is hauled to various surface stockpiles located near the plant and mine.

Mineral Processing

The Don Mario Operation processing plant consists of the following sequence of macro unit operations: Crushing and Screening

Grinding and Cycloning Gravity Concentration Flotation Concentration Tailings Storage Facility (TSF)

The processing plant can process 876,000 tpa with a daily throughput of 2,500 tpd. Overall recoveries achieved in recent operation for Fiscal Year 2016 were 56.3% for gold, 62.2% and 73.4% for silver respectively. Products include gold concentrate, copper concentrate with gold and silver credits and a very limited amount of lead concentrate.

The commissioning of the CIL is also expected to position Don Mario to leverage other potential business opportunities. Higher gold grades ores from the LMZ will be processed in the CIL plant according to a metallurgical study prepared for EMIPA.

In recent months, the Company has been re-evaluating the economic potential of processing existing mineral stockpiles, including the oxides previously treated through the leach-precipitation-flotation process, and expects to have the results of this testing in the first quarter of fiscal 2017. As at September 30, 2016, EMIPA had stockpile mineral resources of approximately 2.2 tonnes with an average gold grade of 1.84 g/t. The Company will also be commencing an evaluation of processing of tailings material through the CIL circuit to determine the viability of recovering gold that has been deposited into the tailings facility as a result of the flotation-only process used since 2011.

### Project Infrastructure

The Don Mario Operation main infrastructure was completed in 2003 for underground mining of the LMZ deposit. The mill was expanded in 2011 to accommodate higher throughput from mining the UMZ deposit as an open pit.

Surface facilities other than the process plant include a 300 person modern camp facility with kitchens, lunch rooms, changing rooms, clinic, warehouses, maintenance shops, electromechanical workshops, a laboratory, a core storage facility, a freshwater dam, a natural gas power plant, electrical power lines and substations, and a complete telecommunication system providing phone lines and fast internet and intranet connections for the various offices. The surface facilities also include a de-commissioned sulphuric acid plant and a CIL circuit which is being recommissioned.

Underground facilities in place to service the mined out LMZ underground deposit include, but are not limited to, a mine portal, decline and underground accesses, various service and ventilation raises.

The Tailings Storage Facility (TSF) is located approximately 1.0 km to the northeast of the plant facility and is properly lined and has an adequate pumping system. The plant-tailings circuit is a no-discharge facility.

### Markets

The principal commodities at the Don Mario Operation are freely traded, at prices that are widely known, so that prospects for sale of any production are virtually assured, subject to achieving product specifications.

As per industry norms for copper concentrate, penalty charges are incurred for various deleterious elements when they are over specified concentrations.

### Environmental, Permitting and Social Considerations

The Don Mario Operation is permitted. EMIPA S.A. has obtained all material permits to operate the mine, processing plant, and tailings storage facility.

### Capital and Operating Cost Estimates

The Don Mario Operation capital costs are based on the fiscal year 2016. The estimated sustaining annual capital costs totaled \$6.8 million, and include plant equipment and maintenance, equipment costs, exploration, and tailings management. Capital costs incurred over the remaining operational years are expected to remain around these levels unless there are significant changes made to the plant facilities, exploration budget or increased capital costs associated with mining future deposits.

The cash operating costs ("COC") are calculated on a co-product basis. The COCs (co-product) are \$1,023 per ounces gold, \$1.93 per pound of copper and \$15.06 per ounce of silver.

### Recommendations

DGCS has prepared the following Don Mario LMZ and CF deposit recommendations with respect to advancement of their technical and economic assessments within the Don Mario Operation. Additional recommendations arising from a review of general exploration information for the Don Mario property are also offered.

- Additional diamond drilling is required to better define and confirm metal grade trends within the CF deposit. It is recommended that infill drilling of the currently defined deposit be carried out at 25 meter spaced sections along the length of the deposit. This program should include initial testing of potential deposit extension areas both down dip and along strike to both northeast and southwest.

- After completion of recommended CF core drilling, DGCS recommends creating a new mineralization model and resource estimate for the Cerro Felix deposit. This should be based on revised geological and grade distribution models that reflect all new drilling results.
- The potential future impact of CF mineral resources on the Don Mario life of mine plan, assuming conversion to reserves, should be assessed in detail.
- Significant exploration potential is present along the under-explored strike extensions of the Cristal Schist Belt and Eastern Schist Belt and this should be systematically explored for new deposits similar in style to those mined to date at the Don Mario Operation.
- Further detailed assessment of the LT deposit by remodeling and assessment of deposit extension drilling opportunities should be undertaken.