

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549**

FORM 40-F

ANNUAL REPORT PURSUANT TO SECTION 13(a) OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 2019

Commission file number 001-12284

GOLDEN STAR RESOURCES LTD.
(Exact Name of Registrant as Specified in its Charter)

Canada

1040

Not Applicable

(Province or other jurisdiction of incorporation or organization)

(Primary Standard Industrial Classification Code)

(I.R.S. Employer Identification No.)

**150 King Street West, Suite 1200
Toronto, Ontario M5H 1J9
(416) 583-3800**

(Address and Telephone Number of Registrant's Principal Executive Offices)

**Davis Graham & Stubbs LLP
1550 Seventeenth Street, Suite 500
Denver, Colorado 80202
(303) 892-9400**

(Name, address (including zip code) and telephone number (including area code) of agent for service in the United States)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class

Name of each exchange on which registered

Common Stock, no par value

NYSE American; Toronto Stock Exchange

Securities registered or to be registered pursuant to Section 12(g) of the Act:

None

(Title of Class)

Securities for which there is a reporting obligation pursuant to Section 15(d) of the Act:

None

(Title of Class)

For annual reports, indicate by check mark the information filed with this Form:

Annual information form Audited annual financial statements

Indicate the number of outstanding shares of each of the issuer's classes of capital or common stock as of the close of the period covered by the annual report:

109,385,063

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes No

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 12b-2 of the Exchange Act.

Emerging growth company

If an emerging growth company that prepares its financial statements in accordance with U.S. GAAP, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

EXPLANATORY NOTE

Golden Star Resources Ltd. (the “Company” or “Golden Star”) is a Canadian issuer eligible to file its annual report pursuant to Section 13 of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), on Form 40-F pursuant to the multi-jurisdictional disclosure system of the Exchange Act. The Company is a “foreign private issuer” as defined in Rule 3b-4 under the Exchange Act. Equity securities of the Company are accordingly exempt from Sections 14(a), 14(b), 14(c), 14(f) and 16 of the Exchange Act pursuant to Rule 3a12-3.

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 40-F and the exhibits attached hereto contain “forward-looking information” within the meaning of applicable Canadian securities laws and “forward-looking statements” within the meaning of the United States Private Securities Litigation Reform Act of 1995, concerning the business, operations and financial performance and condition of Golden Star and are based on expectations, estimates and projections as of the date of this Annual Report on Form 40-F.

Generally, forward-looking information and statements can be identified by the use of forward-looking terminology such as “plans”, “expects”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates”, “believes” or variations of such words and phrases (including negative or grammatical variations) or statements that certain actions, events or results “may”, “could”, “would”, “might” or “will” “be taken”, “occur”, “be achieved” or the negative connotation thereof.

Forward-looking information and statements include, but are not limited to, information or statements with respect to: production and cash operating cost estimates; the intended expansion of production and reduction of costs; the impact of rain on our operations and exploration activities; estimated costs and timing of the development of new deposits and sources of funding for such development; the sources of gold production at Wassa Underground and Prestea Underground (each as defined in the “Overview of Golden Star” section below) during 2020; the timing for completion of mining from the Prestea open pits during 2020; the mining rate and grade from Wassa Underground; the anticipated levels of sulphide minerals; the grade in the plant feed from Wassa Underground and any consequent detrimental metallurgical or mechanical properties from such ore; whether Wassa Underground’s production rate could be increased without the need to incur substantial capital expenditures for infrastructure upgrades; accessing the projected up plunge extension on 17L Level of the West Reef ore body at Prestea Underground; the ability and timing for the Company to transform into a lower cost producer and the resulting reduction in cash operating costs; the ability of the Company to repay the 7% Convertible Debentures when due or to restructure them or make alternate arrangements; the belief that the loss of the Company’s current customer would not materially delay or disrupt revenues; expansion drilling at Wassa Underground and Prestea Underground with a view to converting inferred mineral resources to indicated mineral resources, and indicated resources into measured resources; environmental impact of operations, including acid drainage generation and overall geochemical impact of mining the Prestea Underground West Reef stopes; capital expenditures; government review of gold exploration areas; the mining laws, environmental laws and applicable tax regime of Ghana; production capacity, rates and costs; currency exchange rate fluctuations; gold sales; mining operations and gold recovery rates; ore type, delivery and processing; use of waste rock; tailings processing; completion, use and capacity of TSF2 (as defined in the “Wassa Gold Mine” section below); potential mine life; strip ratios; permitting and approvals; rehabilitation; estimates of mineral reserves and mineral resources and assumptions relating thereto; replacement of the mine wide pumping system in Prestea following commercial production; geological, environmental, community and engineering studies; exploration efforts and activities; timing for commencing or completing drilling; as to mine water leachate being predicted to achieve EPA (as defined under “**Environmental and other Laws and Regulations**”) discharge criteria; the potential impact of COVID-19; updates to resource models; the potential to expand the mineral reserves of the Company through further drilling; the potential to increase the Company’s mineral resources outside of the existing mineral resources footprint; the impact that increased exploration is expected to have on mineral resources and mineral reserves; identification of acquisition and growth opportunities; relationships with local stakeholder communities; climate change regulations and climate change; our ability to meet our cash requirements; the incurrence of further debt in the future; and the expected closing of the Company’s Toronto office and relocation of the executive team in the first half of 2020.

Forward-looking information and statements are made based upon certain assumptions and other important factors that, if untrue, could cause the actual results, performance or achievements of Golden Star to be materially different from future results, performance or achievements expressed or implied by such statements. Such statements and information are based on numerous assumptions regarding present and future business strategies and the environment in which Golden Star will operate in the future, including the price of gold, anticipated costs and ability to achieve goals.

Forward-looking information and statements are subject to known and unknown risks, uncertainties, unexpected occurrences and other important factors that may cause the actual results, performance or achievements of Golden Star to be materially different from those expressed or implied by such forward-looking information and statements. The following, in addition to the factors described under the heading “Risk Factors” in the Annual Information Form for the fiscal year ended December 31, 2019 (“AIF”) and Management’s Discussion and Analysis of Financial Condition and Results of Operations for the year ended December 31, 2019 (“MD&A”), each of which is included as an exhibit to this report, are among the factors that could cause actual results to differ materially from the forward-looking statements:

- significant increases or decreases in gold prices and the speculative nature of gold exploration;
 - losses or gains in mineral reserves and mineral resources from changes in operating costs and/or gold prices;
 - failure of exploration efforts to expand mineral reserves and mineral resources around the Company’s existing mines;
 - unexpected changes in business and economic conditions;
 - inaccuracies in mineral reserve and mineral resources estimates;
 - changes in interest and currency exchange rates;
 - possible hedging activities;
 - timing and amount of gold production;
 - unanticipated variations in ore grade, tonnes mined and crushed or milled;
 - unanticipated recovery or production problems, including increased mining of waste material;
 - effects of illegal mining on the Company’s properties;
 - ability to, and cost of, dewatering the Company’s underground mines;
 - changes in mining and processing costs, including changes to costs of raw materials, supplies, services and personnel;
 - changes in metallurgy and processing;
 - availability of skilled personnel, contractors, materials, equipment, supplies, power and water;
 - changes in project parameters or mine plans;
 - costs and timing of development of mineral reserves;
 - weather, including drought or excessive rainfall in West Africa;
 - results of current and future exploration activities;
 - results of pending and future feasibility studies;
 - acquisitions and joint venture relationships;
 - political or economic instability, either globally or in the countries in which the Company operates;
 - changes in regulatory frameworks or regulations affecting the Company’s operations, particularly in Ghana, where its producing properties are located;
 - local and community impacts and issues;
 - availability and cost of replacing mineral reserves;
 - timing of receipt and maintenance of government approvals and permits;
 - unanticipated transportation costs including shipping incidents and losses;
 - accidents, labour disputes and other operational hazards;
 - delays in obtaining government approvals, financing, for the completion of development or construction activities;
 - an inability to obtain power for operations on favorable terms or at all;
 - environmental (including reclamation) costs and risks;
 - changes in tax or labour laws;
 - title issues;
 - competitive factors, including competition for property acquisitions and for skilled personnel;
 - possible litigation;
 - availability of capital at reasonable rates or at all;
 - risks related to indebtedness and the service of such indebtedness;
 - changes in the exchange rates of the Ghanaian Cedi and government policies regarding payments in foreign currency;
 - public health pandemics such as COVID-19, including risks associated with reliance on suppliers, uncertainties relating to its ultimate spread, severity and duration of COVID-19, and related adverse effects on the economies and financial markets of many countries; and
 - changes to Golden Star’s mining licences, including revocation.
-

Although Golden Star has attempted to identify important factors that could cause actual results, performance or achievements to differ materially from those described in forward-looking information and statements, there may be other factors that cause results, performance or achievements not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking information and statements. Forward-looking information and statements are made as of the date hereof and accordingly are subject to change after such date. Except as otherwise indicated by Golden Star, these statements do not reflect the potential impact of any non-recurring or other special items or of any dispositions, monetizations, mergers, acquisitions, other business combinations or other transactions that may be announced or that may occur after the date hereof. Forward-looking information and statements are provided for the purpose of providing information about management's current expectations and plans and allowing investors and others to better understand of the Company's operating environment. Golden Star does not undertake to update any forward-looking information and statements that are included in this Annual Information Form, except in accordance with and as required by applicable securities laws.

CAUTIONARY NOTE REGARDING MINERAL RESERVES AND MINERAL RESOURCES

Certain technical information contained in this Annual Report on Form 40-F and the exhibits hereto concerning our properties and operations has been prepared in accordance with Canadian standards under applicable Canadian securities laws, which differ from the requirements of U.S. securities laws. The terms "*Mineral Resource*", "*Measured Mineral Resource*", "*Indicated Mineral Resource*" and "*Inferred Mineral Resource*" used in the exhibits hereto are Canadian mining terms as defined in accordance with National Instrument 43-101 - *Standards of Disclosure for Mineral Projects* ("NI 43-101"), and which have been calculated in accordance with the standards of the Canadian Institute of Mining, Metallurgy and Petroleum and NI 43-101.

While the terms "*Mineral Resource*", "*Measured Mineral Resource*", "*Indicated Mineral Resource*" and "*Inferred Mineral Resource*" are recognized and required by Canadian securities regulations, they are not recognized by the United States Securities and Exchange Commission ("SEC"). Pursuant to United States standards as promulgated by the SEC under Industry Guide 7, mineralization may not be classified as a "reserve" unless the determination has been made that the mineralization could be economically and legally produced or extracted at the time the reserve determination is made. "*Inferred Mineral Resource*" has a great amount of uncertainty as to its existence, as to whether it can be mined and as to its economic and legal feasibility, except in rare cases. It cannot be assumed that all or any part of an "*Inferred Mineral Resource*" will ever be upgraded to a higher category. Under Canadian securities regulations, estimates of Inferred Mineral Resources may not form the basis of feasibility or other economic studies, except in rare cases. **Readers are cautioned not to assume that all or any part of a "*Measured Mineral Resource*" or "*Indicated Mineral Resource*" will ever be converted into Mineral Reserves. Readers are also cautioned not to assume that all or any part of an "*Inferred Mineral Resource*" exists, or is economically or legally mineable.** In addition, disclosure of "contained ounces" is permitted disclosure under Canadian regulations; however, the SEC only permits registrants to report SEC compliant reserves in ounces, and requires reporting of mineralization that does not qualify as reserves as in place tonnage and grade without reference to unit measures. As such, certain information contained in the exhibits hereto concerning descriptions of mineralization and resources under Canadian standards may not be comparable to similar information made public by United States companies subject to reporting and disclosure requirements of the SEC.

NYSE AMERICAN CORPORATE GOVERNANCE

The Company is subject to corporate governance requirements prescribed under applicable Canadian securities laws, rule and policies. The Company is also subject to corporate governance requirements prescribed by the listing standards of the NYSE American LLC ("NYSE American"), and the rules and regulations promulgated by the SEC under the Exchange Act (including those applicable rules and regulations mandated by the Sarbanes-Oxley Act of 2002).

Section 110 of the NYSE American Company Guide permits NYSE American to consider the laws, customs and practices of foreign issuers in relaxing certain NYSE American listing criteria, and to grant exemptions from NYSE American listing criteria based on these considerations. A company seeking relief under these provisions is required to provide written certification from independent local counsel that the non-complying practice is not prohibited by home country law. A description of the significant ways in which the Company's governance practices differ from those followed by domestic companies pursuant to NYSE American standards is as follows:

Shareholder Vote Requirement: One significant manner in which the Company's governance practices differ from those followed by U.S. domestic companies pursuant to NYSE American standards concerns shareholder approval requirements. Section 713 of the NYSE American Company Guide requires a listed company to obtain the approval of its shareholders for certain types of securities issuances, including private placements that may result in the issuance of common shares (or securities convertible into common shares) equal to 20% or more of the presently outstanding shares for less than the greater of book or market value

of the shares. In general, there is no such requirement under the rules of the Canadian Business Corporation Act or under the rules of the Toronto Stock Exchange ("TSX") unless the transaction results in the issuance of common shares (or securities convertible or exercisable into common shares) equal to 25% or more of the currently issued and outstanding shares of the listed company or a change of control. Furthermore, under certain circumstances, the TSX may, pursuant to Section 604(e) of the TSX company guide, grant waivers to its shareholder approval requirements where the listed company would suffer financial hardship in complying with such requirements. The conditions under which the Toronto Stock Exchange grants such waivers from its shareholder approval requirements may depart from similar NYSE American waivers or exemptions, if any. The Company will seek a waiver from the NYSE American's shareholder approval requirements in circumstances where the securities issuance does not trigger such a requirement under the rules of the Canadian Business Corporation Act or under the rules of the TSX.

Shareholder Meeting Quorum Requirement: The NYSE American recommends a minimum quorum requirement for a shareholder meeting of one-third of the outstanding shares of common stock. In addition, a company listed on NYSE American is required to state its quorum requirement in its by-laws. In accordance with applicable laws in Canada, the Company's quorum requirement is set forth in its by-laws, which provides that the quorum for the transaction of business at any meeting of shareholders shall consist of two persons present in person, each being a shareholder entitled to vote thereat or a duly appointed proxyholder or representative for a shareholder so entitled.

Proxy Delivery Requirement: The NYSE American requires the solicitation of proxies and delivery of proxy statements for all shareholder meetings, and requires that these proxies shall be solicited pursuant to a proxy statement that conforms to SEC proxy rules. The Company is a "foreign private issuer" as defined in Rule 3b-4 under the Exchange Act, and the equity securities of the Company are accordingly exempt from the proxy rules set forth in Sections 14(a), 14(b), 14(c) and 14(f) of the Exchange Act. The Company solicits proxies in accordance with applicable rules and regulations in Canada.

The foregoing is consistent with the laws, customs and practices in Canada.

Copies of the Company's corporate governance materials are available on the Company's website at www.gsr.com. In addition, the Company is required by National Instrument 58-101 of the Canadian Securities Administrators, *Disclosure of Corporate Governance Practices* ("NI 58-101"), to describe its practices and policies with regard to corporate governance in management information circulars that are furnished to the Company's shareholders in connection with annual meetings of shareholders.

TAX MATTERS

Purchasing, holding, or disposing of securities of the Company may have tax consequences under the laws of the United States and Canada that are not described in this Annual Report on Form 40-F.

CURRENCY, EXCHANGE RATE AND OTHER INFORMATION

Unless otherwise indicated, all dollar amounts in this Annual Report on Form 40-F are in United States dollars. The exchange rate on March 26, 2020 as reported by the Bank of Canada for the conversion of Canadian dollars into United States dollars was Cdn\$1.00 per \$0.71 and the conversion of United States dollars was \$1.00 per Cdn\$1.41.

ANNUAL INFORMATION FORM

The Company's AIF is filed as Exhibit 99.1 and incorporated by reference in this Annual Report on Form 40-F.

MANAGEMENT'S DISCUSSION AND ANALYSIS AND CONSOLIDATED FINANCIAL STATEMENTS

Management's Discussion and Analysis

The Company's MD&A is filed as Exhibit 99.2 and incorporated by reference in this Annual Report on Form 40-F.

Audited Consolidated Financial Statements

The Audited Consolidated Financial Statements, including the report of the independent registered public accounting firm with respect thereto, are filed as Exhibit 99.3 and incorporated by reference in this Annual Report on Form 40-F.

DISCLOSURE CONTROLS AND PROCEDURES

The Company conducted an evaluation of the effectiveness of the design and operation of its disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of December 31, 2019. This evaluation was conducted under the supervision and with the participation of management, including the Company's chief executive officer ("CEO") and chief financial officer ("CFO"). Based upon this evaluation, the Company's CEO and CFO have concluded that, as of December 31, 2019, the Company's disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed by the Company in reports filed or submitted under the Exchange Act is recorded, processed, summarized and reported within the time periods specified by the rules and forms of the SEC. The Company also concluded that its disclosure controls and procedures are effective to provide reasonable assurance that information required to be disclosed in the reports filed or submitted under the Exchange Act is accumulated and communicated to the Company's management, including its CEO and CFO, to allow timely decisions regarding required disclosure.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management's Report on Internal Control Over Financial Reporting

The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Internal control over financial reporting is a process designed by, or under the supervision of, the Company's principal executive officer and principal financial officer and effected by the Company's board of directors, management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the financial statements for external purposes in accordance with IFRS. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements.

Management conducted an evaluation of the design and operation of the Company's internal control over financial reporting as of December 31, 2019, based on the criteria set forth in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this evaluation, management has concluded that the Company's internal control over financial reporting was effective as of December 31, 2019.

The Company's independent registered public accounting firm has issued an attestation report on the Company's internal control over financial reporting as of December 31, 2019, included with the Audited Consolidated Financial Statements, which are filed as Exhibit 99.3 and incorporated by reference in this Annual Report on Form 40-F.

Changes in Internal Control Over Financial Reporting

During the period covered by this Annual Report on Form 40-F, no change occurred in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. Additionally, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

NOTICES PURSUANT TO REGULATION BTR

There were no notices required by Rule 104 of Regulation BTR that the Company sent during the year ended December 31, 2019 concerning any equity security subject to a blackout period under Rule 101 of Regulation BTR.

AUDIT COMMITTEE

The Company's Board of Directors has a separately designated standing Audit Committee of the Board of Directors. The members of the Company's Audit Committee are identified in the AIF, attached herewith as Exhibit 99.1 and incorporated by reference herein. In the opinion of the Company's Board of Directors, all members of the Audit Committee are independent (as determined under Rule 10A-3 of the Exchange Act and the rules of the NYSE American) and are financially literate. In addition,

the Company's Board of Directors has determined that Robert E. Doyle, chairman of the Audit Committee is an "audit committee financial expert" as defined in Item 407(d)(5)(ii) of Regulation S-K under the Exchange Act.

CODE OF ETHICS

The Company has adopted a Code of Ethics entitled, "Golden Star Resources Ltd. Code of Ethics for Directors, Senior Executives and Financial Officers and Other Executive Officers" ("Ethics Code"). The Ethics Code was adopted pursuant to Section 406 of Sarbanes Oxley Act of 2002, NI 58-101, National Policy 58-201 - Corporate Governance Guidelines, and the rules of the NYSE American, and other applicable corporate governance standards, to provide written standards and guidance for Golden Star's directors, principal executive officer, principal financial officer, principal accounting officer or controller and those performing similar functions to promote honest and ethical conduct and compliance with applicable law. The Ethics Code requires that individuals covered by its provisions report suspected violations to either of the Chairman of the Board or the Executive Vice President and Chief Financial Officer, in his capacity as Compliance Officer, and that the Board and or Compliance Officer take appropriate action on any such reports.

The Company has also adopted a policy entitled "Business Code and Ethics Policy" ("Ethics Policy"). The Ethics Policy was adopted to affirm that the observance of applicable laws and ethical business conduct wherever Golden Star does business must be the guiding principle. The Ethics Policy contains Golden Star's standards of behavior and guidelines that must be followed by all directors, officers, employees, consultants and other agents while making judgments or evaluating the judgments or actions of others as to what constitutes ethical business conduct in any particular situation. Pursuant to the Ethics Policy, any employee who feels that the policy is not being adhered to, in any respect, by any other employee should promptly report all pertinent details to the Executive Vice President and Chief Financial Officer, in his capacity as Compliance Officer.

All amendments and waivers of the Ethics Code and Ethics Policy will be posted on the Company's website or submitted on Form 6-K. Each of the Ethics Code and Ethics Policy is located on the Company's website at www.gsr.com. During the fiscal year ended December 31, 2019, the Company did not substantively amend, waive or implicitly waive any provision of the Ethics Code or Ethics Policy with respect to any of the directors, executive officers or employees subject to it.

PRINCIPAL ACCOUNTANT FEES AND SERVICES

The disclosure provided under the headings "Pre-Approval Policies and Procedures" and "External Auditor Service Fees" contained in the AIF as Exhibit 99.1 and as filed with this Annual Report on Form 40-F contains the Company's disclosure regarding its principal accountant fees and services and pre-approval policies and procedures and is incorporated by reference herein.

OFF-BALANCE SHEET TRANSACTIONS

The Company does not have any off-balance sheet financing arrangements or relationships with unconsolidated special purpose entities.

CONTRACTUAL OBLIGATIONS

The information provided under the heading "Management's Discussion and Analysis - Table of Contractual Obligations" contained in Exhibit 99.2 as filed with this Annual Report on Form 40-F contains the Company's disclosure of contractual obligations and is incorporated by reference herein.

MINE SAFETY DISCLOSURE

Not applicable.

UNDERTAKING

The Company undertakes to make available, in person or by telephone, representatives to respond to inquiries made by the SEC staff, and to furnish promptly, when requested to do so by the SEC staff, information relating to: the securities registered pursuant to Form 40-F; the securities in relation to which the obligation to file an Annual Report on Form 40-F arises; or transactions in said securities.

CONSENT TO SERVICE OF PROCESS

The Company has filed an Appointment of Agent for Service of Process and Undertaking on Form F-X with respect to the class of securities in relation to which the obligation to file the Form 40-F arises.

EXHIBITS

Exhibit Number	Description of Exhibits
99.1	Annual Information Form of the Company for the year ended December 31, 2019
99.2	Management's Discussion and Analysis for the year ended December 31, 2019
99.3	Annual Consolidated Financial Statements for the year ended December 31, 2019, together with the report of the independent registered public accounting firm thereon
99.4	Certifications of Chief Executive Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Exchange Act, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
99.5	Certifications of Chief Financial Officer pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Exchange Act, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
99.6	Certificate of Principal Executive Officer pursuant to 18 U.S.C. 1350, as enacted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
99.7	Certificate of Principal Financial Officer pursuant to 18 U.S.C. 1350, as enacted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
99.8	Consent of Independent Registered Public Accounting Firm
99.9	Consent of Matt Varvari
99.10	Consent of S. Mitch Wasel
99.11	Consent of Dr. Martin Raffield
99.12	Consent of Philipa Varris

SIGNATURES

Pursuant to the requirements of the Exchange Act, the Registrant certifies that it meets all of the requirements for filing on Form 40-F and has duly caused this annual report to be signed on its behalf by the undersigned, thereto duly authorized.

GOLDEN STAR RESOURCES LTD.

/s/ Paul Thomson

Paul Thomson
Executive Vice President and Chief Financial Officer

March 27, 2020



GOLDEN STAR RESOURCES LTD.

Annual Information Form

For the Year Ended December 31, 2019

DATED: March 24, 2020

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ABOUT INFORMATION IN THIS ANNUAL INFORMATION FORM

Unless specifically stated otherwise in this Annual Information Form:

- all dollar amounts are in United States dollars;
 - information is presented as of December 31, 2019; and
 - references to “Golden Star”, the “Company”, “us”, “our” and “we”, or related or similar terms, refer to Golden Star Resources Ltd., its predecessors and consolidated subsidiaries, or any one or more of them, as the context requires.
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GLOSSARY OF UNIT ABBREVIATIONS

The following is a glossary of the unit abbreviations used in this Annual Information Form.

ABBREVIATION UNIT

°	degrees
°C	degrees Celsius
Au	gold
g/t	grams per tonne
km	kilometre
koz	thousand ounces
m	metre
mm	millimetre
Mt	million tonnes
Mtpa	million tonnes per annum
oz	ounces
t	tonnes

CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION

This Annual Information Form contains “forward-looking information” within the meaning of applicable Canadian securities laws and “forward-looking statements” within the meaning of the United States Private Securities Litigation Reform Act of 1995, concerning the business, operations and financial performance and condition of Golden Star that are based on expectations, estimates and projections as of the date of this Annual Information Form. Generally, forward-looking information and statements can be identified by the use of forward-looking terminology such as “plans”, “expects”, “is expected”, “budget”, “scheduled”, “estimates”, “forecasts”, “intends”, “anticipates”, “believes” or variations of such words and phrases (including negative or grammatical variations) or statements that certain actions, events or results “may”, “could”, “would”, “might”, or “will” “be taken”, “occur”, “be achieved” or the negative connotation thereof.

Forward-looking information and statements include, but are not limited to, information or statements with respect to: production and cash operating cost estimates; the intended expansion of production and reduction of costs; the impact of rain on our operations and exploration activities; estimated costs and timing of the development of new deposits and sources of funding for such development; the sources of gold production at Wassa Underground and Prestea Underground (each as defined in the “Overview of Golden Star” section below) during 2020; the timing for completion of mining from the Prestea open pits during 2020; the mining rate and grade from Wassa Underground; the anticipated levels of sulphide minerals; the grade in the plant feed from Wassa Underground and any consequent detrimental metallurgical or mechanical properties from such ore; whether Wassa Underground’s production rate could be increased without the need to incur substantial capital expenditures for infrastructure upgrades; accessing the projected up plunge extension on 17L Level of the West Reef ore body at Prestea Underground; the ability and timing for the Company to transform into a lower cost producer and the resulting reduction in cash operating costs; the ability of the Company to repay the 7% Convertible Debentures when due or to restructure them or make alternate arrangements; the belief that the loss of the Company’s current customer would not materially delay or disrupt revenues; expansion drilling at Wassa Underground and Prestea Underground with a view to converting inferred mineral resources to indicated mineral resources, and indicated resources into measured resources; environmental impact of operations, including acid drainage generation and overall geochemical impact of mining the Prestea Underground West Reef stopes; capital expenditures; government review of gold exploration areas; the mining laws, environmental laws and applicable tax regime of Ghana; production capacity, rates and costs; currency exchange rate fluctuations; gold sales; mining operations and gold recovery rates; ore type, delivery and processing; use of waste rock; tailings processing; completion, use and capacity of TSF2 (as defined in the “Wassa Gold Mine” section below); potential mine

life; strip ratios; permitting and approvals; rehabilitation; estimates of mineral reserves and mineral resources and assumptions relating thereto; replacement of the mine wide pumping system in Prestea following commercial production; geological, environmental, community and engineering studies; exploration efforts and activities; timing for commencing or completing drilling; as to mine water leachate being predicted to achieve EPA (as defined under “**Environmental and other Laws and Regulations**”) discharge criteria; the potential impact of COVID-19; updates to resource models; the potential to expand the mineral reserves of the Company through further drilling; the potential to increase the Company’s mineral resources outside of the existing mineral resources footprint; the impact that increased exploration is expected to have on mineral resources and mineral reserves; identification of acquisition and growth opportunities; relationships with local stakeholder communities; climate change regulations and climate change; our ability to meet our cash requirements; the incurrence of further debt in the future; and the expected closing of the Company’s Toronto office and relocation of the executive team in the first half of 2020.

Forward-looking information and statements are made based upon certain assumptions and other important factors that, if untrue, could cause the actual results, performance or achievements of Golden Star to be materially different from future results, performance or achievements expressed or implied by such statements. Such statements and information are based on numerous assumptions regarding present and future business strategies and the environment in which Golden Star will operate in the future, including the price of gold, anticipated costs and ability to achieve goals.

Forward-looking information and statements are subject to known and unknown risks, uncertainties, unexpected occurrences, and other important factors that may cause the actual results, performance or achievements of Golden Star to be materially different from those expressed or implied by such forward-looking information and statements. The following, in addition to the factors described under “Risk Factors”, are among the factors that could cause actual results, performance or achievement to differ materially from the forward-looking statements:

- significant increases or decreases in gold prices and the speculative nature of gold exploration;
- losses or gains in mineral reserves and mineral resources from changes in operating costs and/or gold prices;
- failure of exploration efforts to expand mineral reserves and mineral resources around the Company’s existing mines;
- unexpected changes in business and economic conditions;
- inaccuracies in mineral reserve and mineral resources estimates;
- changes in interest and currency exchange rates;
- possible hedging activities;
- timing and amount of gold production;
- unanticipated variations in ore grade, tonnes mined and crushed or milled;
- unanticipated recovery or production problems, including increased mining of waste material;
- effects of illegal mining on the Company’s properties;
- ability to, and cost of, dewatering the Company’s underground mines;
- changes in mining and processing costs, including changes to costs of raw materials, supplies, services and personnel;
- changes in metallurgy and processing;
- availability of skilled personnel, contractors, materials, equipment, supplies, power and water;
- changes in project parameters or mine plans;
- costs and timing of development of mineral reserves;
- weather, including drought or excessive rainfall in West Africa;
- results of current and future exploration activities;
- results of pending and future feasibility studies;

- acquisitions and joint venture relationships;
- political or economic instability, either globally or in the countries in which the Company operates;
- changes in regulatory frameworks or regulations affecting the Company's operations, particularly in Ghana, where its producing properties are located;
- local and community impacts and issues;
- availability and cost of replacing mineral reserves;
- timing of receipt and maintenance of government approvals and permits;
- unanticipated transportation costs including shipping incidents and losses;
- accidents, labour disputes and other operational hazards;
- delays in obtaining government approvals, financing, for the completion of development or construction activities;
- an inability to obtain power for operations on favorable terms or at all;
- environmental (including reclamation) costs and risks;
- changes in tax or labour laws;
- title issues;
- competitive factors, including competition for property acquisitions and for skilled personnel;
- possible litigation;
- availability of capital at reasonable rates or at all;
- risks related to indebtedness and the service of such indebtedness;
- changes in the exchange rates of the Ghanaian Cedi and government policies regarding payments in foreign currency;
- public health pandemics such as COVID-19, including risks associated with reliance on suppliers, uncertainties relating to its ultimate spread, severity and duration of COVID-19, and related adverse effects on the economies and financial markets of many countries; and
- changes to Golden Star's mining licences, including revocation.

Although Golden Star has attempted to identify important factors that could cause actual results, performance or achievements to differ materially from those described in forward-looking information and statements, there may be other factors that cause results, performance or achievements not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate, as actual results and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking information and statements. Forward-looking information and statements are made as of the date hereof and accordingly are subject to change after such date. Except as otherwise indicated by Golden Star, these statements do not reflect the potential impact of any non-recurring or other special items or of any dispositions, monetizations, mergers, acquisitions, other business combinations or other transactions that may be announced or that may occur after the date hereof. Forward-looking information and statements are provided for the purpose of providing information about management's current expectations and plans and allowing investors and others to better understand of the Company's operating environment. Golden Star does not undertake to update any forward-looking information and statements that are included in this Annual Information Form, except in accordance with and as required by applicable securities laws.

CAUTIONARY NOTE REGARDING MINERAL RESERVES AND MINERAL RESOURCES

Scientific and technical information contained in this Annual Information Form was reviewed and approved by S. Mitchel Wasel, Vice-President, Exploration for Golden Star and Matthew Varvari, Vice President, Technical Services. Messrs. Wasel and Varvari are each a "qualified person" ("QP") as defined by National Instrument 43-101 - *Standards of Disclosure for Mineral Projects*

(“**NI 43-101**”). All mineral reserves and mineral resources have been prepared in accordance with the standards of the Canadian Institute of Mining, Metallurgy and Petroleum (“**CIM**”) and in accordance with the requirements of NI 43-101. All mineral resources are reported inclusive of mineral reserves. Mineral resources which are not mineral reserves do not have demonstrated economic viability. Information regarding the Company’s mineral properties mentioned in this Annual Information Form, including as to the technical reports relating to such properties, is described under the heading “Description of the Properties - Golden Star Material Properties”.

CAUTIONARY NOTE TO U.S. INVESTORS

This Annual Information Form has been prepared in accordance with the requirements of the securities laws in effect in Canada which differ materially from the requirements of United States securities laws applicable to U.S. companies. Information concerning the Company’s mineral properties has been prepared in accordance with the requirements of Canadian securities laws, which differ in material respects from the requirements of the United States Securities and Exchange Commission (the “**SEC**”) set forth in Industry Guide 7. Under the SEC’s Industry Guide 7, mineralization may not be classified as a “reserve” unless the determination has been made that the mineralization could be economically and legally produced or extracted at the time of the reserve determination, and the SEC does not recognize the reporting of mineral deposits which do not meet the SEC Industry Guide 7 definition of “Reserve”. In accordance with NI 43-101, the terms “mineral reserve”, “proven mineral reserve”, “probable mineral reserve”, “mineral resource”, “measured mineral resource”, “indicated mineral resource” and “inferred mineral resource” are defined in accordance with CIM standards. While the terms “mineral resource”, “measured mineral resource”, “indicated mineral resource” and “inferred mineral resource” are recognized and required by NI 43-101, the SEC does not recognize them. You are cautioned that, except for that portion of mineral resources classified as mineral reserves, mineral resources do not have demonstrated economic value. Inferred mineral resources have a high degree of uncertainty as to their existence and as to whether they can be economically or legally mined. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Therefore, you are cautioned not to assume that all or any part of an inferred mineral resource exists, that it can be economically or legally mined, or that it will ever be upgraded to a higher category. Likewise, you are cautioned not to assume that all or any part of measured or indicated mineral resources will ever be upgraded into mineral reserves. In addition, disclosure of “contained ounces” is permitted under Canadian securities laws; however, the SEC only permits registrants to report SEC compliant reserves in ounces, and requires reporting of mineralization that does not qualify as reserves as in place tonnage and grade without reference to unit measures. As such, certain information contained herein concerning descriptions of mineralization and resources under Canadian securities laws may not be comparable to similar information made public by United States companies subject to reporting and disclosure requirements of the SEC.

CURRENCY PRESENTATION AND EXCHANGE RATE INFORMATION

We report in United States dollars. Accordingly, all references to “\$”, “U.S.\$” or “United States dollars” in this Annual Information Form refer to United States dollar values. References to “Cdn.\$” or “Canadian dollars” are used to indicate Canadian dollar values.

The daily rate of exchange on December 31, 2019, as reported by the Bank of Canada for the conversion of Canadian dollars into United States dollars was Cdn.\$1.00 equals U.S.\$ 0.7699 and for the conversion of United States dollars into Canadian dollars was U.S.\$1.00 equals Cdn.\$1.2988.

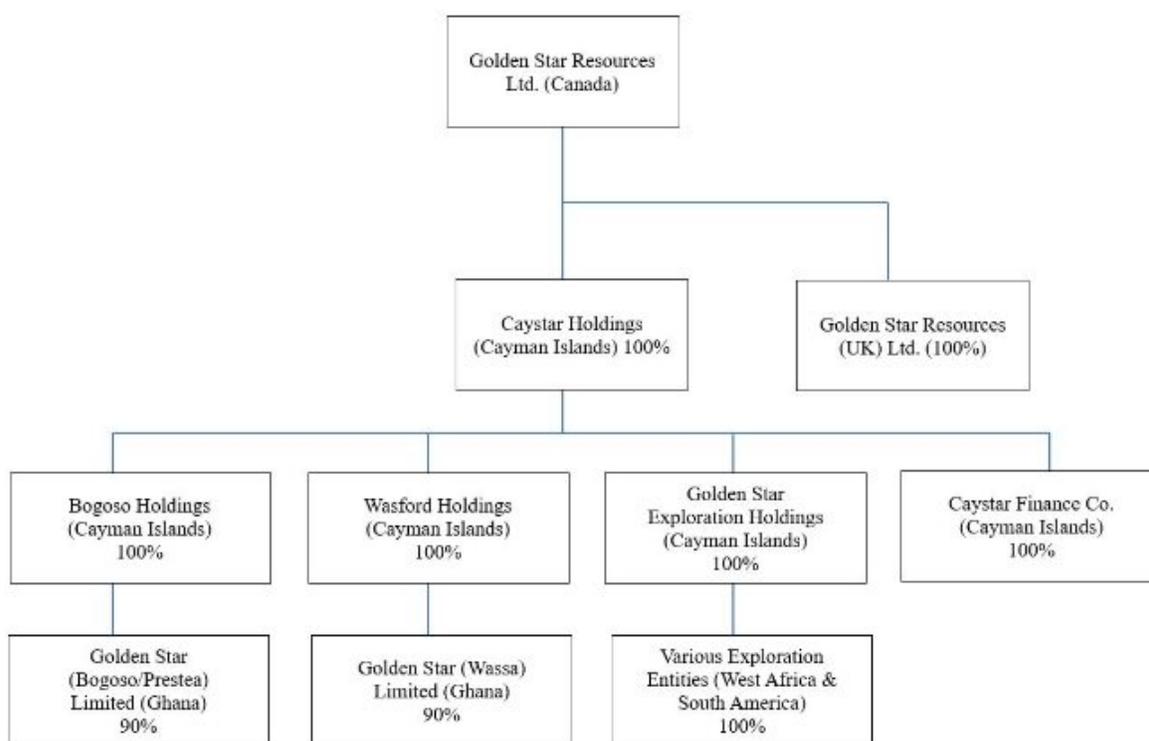
The following table sets forth, for 2019 and 2018, the high, low and average of the daily exchange rates for that year, each for Cdn.\$1.00 dollar in terms of U.S. dollars as reported by the Bank of Canada.

	Year ended Dec. 31, 2019 (U.S. \$)	Year ended Dec. 31, 2018 (U.S. \$)
High.....	0.7699	0.8138
Low.....	0.7353	0.7330
Average.....	0.7537	0.7721

CORPORATE STRUCTURE

Golden Star Resources Ltd. was established under the *Canada Business Corporations Act* on May 15, 1992, as a result of the amalgamation of South American Goldfields Inc., a corporation incorporated under the federal laws of Canada, and Golden Star Resources Ltd., a corporation originally incorporated under the provisions of the *Business Corporations Act (Alberta)* on March 7, 1984, as Southern Star Resources Ltd. Concurrent with the amalgamation. On October 18, 2018, the Company consolidated its common shares (the “**Consolidation**”) on the basis of one post-Consolidation common share for every five pre-Consolidation common shares. Golden Star’s registered office is located at 333 Bay Street, Suite 2400, Bay Adelaide Centre, Toronto, Ontario, Canada, M5H 2T6 and its head office is located at 2nd Floor, 161 Brompton Road, Knightsbridge, London SW3 1QP.

The following diagram depicts the organizational structure of Golden Star and its significant subsidiaries:



NOTE ON SHARE REFERENCES

In October of 2018, the Company implemented the Consolidation of its common shares on the basis of one post-Consolidation common share for every five pre-Consolidation common shares. The Consolidation reduced the number of the Company's issued and outstanding common shares from approximately 544.0 million common shares pre-Consolidation to approximately 108.8 million common shares post-Consolidation. The Company's shares commenced trading on a post-Consolidation basis on the Toronto Stock Exchange ("TSX") and the NYSE American ("NYSE") on October 30, 2018. References in this annual information form to common shares and per-share amounts are on a post-Consolidation basis unless otherwise specified.

GENERAL DEVELOPMENT OF THE BUSINESS

OVERVIEW OF GOLDEN STAR

Golden Star indirectly holds a 90% equity interest in Golden Star (Bogoso/Prestea) Limited ("GSBPL") and Golden Star (Wassa) Limited ("GSWL"). GSBPL owns the Bogoso/Prestea property ("**Bogoso/Prestea**"), which contains the Prestea underground gold mine ("**Prestea Underground**"), the Prestea open pit gold mine (and satellite pits) including Prestea South and Mampon, and the Bogoso/Prestea refractory deposits (which have been on care and maintenance since the third quarter of 2015), and the Bogoso/Prestea processing plants. GSWL owns the Wassa property ("**Wassa**"), which contains the Wassa underground gold mine ("**Wassa Underground**"), as well as the processing plant at Wassa. In this Annual Information Form, GSBPL and GSWL are referred to collectively as the "**Foreign Operating Entities**". Golden Star also holds gold exploration interests elsewhere in Ghana.

It is the Company's objective to transform into a high-grade, margin-focused gold mining company through the development of its underground projects.

The Company's operations transact business in U.S. dollars and other currencies and keep financial records in U.S. dollars. Golden Star's accounting records are kept in accordance with International Financial Reporting Standards ("**IFRS**") as issued by the International Accounting Standards Board. The Company's fiscal year end is December 31. The Company is a reporting issuer or the equivalent in all provinces of Canada, in Ghana and in the United States, and files disclosure documents with securities regulatory authorities in Canada and Ghana and with the SEC.

THREE YEAR HISTORY

2017

- January 1 Commercial production was achieved at Wassa Underground and project construction of Wassa Underground, including the installation of ancillary infrastructure, was essentially complete and operational, in accordance with the Company's planned schedule and budget.
- January 17 The Company completed a bought deal public equity offering led by Clarus Securities Inc., pursuant to which the Company issued 6,272,790 common shares for gross proceeds of \$34.5 million.
- March 30 The Company announced that GSWL had signed a commitment letter for a \$25 million secured loan facility with Ecobank Ghana Limited ("**Ecobank**" and the "**Ecobank Loan III**"). The Ecobank Loan III was repayable within 60 months of initial drawdown. The interest rate was equal to the three-month LIBOR plus a spread of 8.0%. The Ecobank Loan III was repaid in October 2019.
- June 1 The Company repaid the remaining \$13.6 million principal amount of the 5% convertible debentures due June 1, 2017, plus accrued interest, in cash.
- September 27 Stopping commenced at Prestea Underground, with successful blasting of the initial ore from the first stope in the West Reef ore body.

2018

- February 1 Commercial production was achieved at the Prestea Underground gold mine.
- March 27 The Company announced its mineral reserves and mineral resources estimate as of December 31, 2017. The mineral reserves were 1.7 million ounces at a gold price assumption of \$1,250 per ounce. The Company's measured and indicated mineral resources were 4.4 million ounces at a gold price assumption of \$1,450 per ounce.
- March 28 A technical report entitled "Technical Report on Resources and Reserves, Golden Star Resources, Bogoso/Prestea Gold Mine, Ghana" was filed.
- June 28 The Company announced that GSWL had signed a commitment letter for a \$20 million secured loan facility (the "**Ecobank Loan IV**") with Ecobank. The Ecobank Loan IV was repayable within 60 months of initial drawdown. The interest rate was equal to the three-month LIBOR plus a spread of 7.5% per annum. The Company used the facility to repay a \$20 million term loan (the "**Term Loan**") it had with Royal Gold, Inc. ("**Royal Gold**"). The Term Loan was part of a \$150 million funding arrangement with Royal Gold and its wholly owned subsidiary RGLD Gold AG ("**RGLD**") which was secured on May 7, 2015. The remaining \$130 million constitutes a stream transaction ("**Stream Transaction**") pursuant to which RGLD paid to Caystar Finance Co. ("**Caystar Finance**"), a wholly owned subsidiary of Golden Star, a \$130 million advance payment in exchange for a gold stream on the Bogoso/Prestea, Prestea Underground, Wassa and Wassa Underground mines. The Ecobank Loan IV was repaid in October 2019.
- October 1 The Company closed a \$125.7 million strategic investment by La Mancha Holding S.à r.l. ("**La Mancha**"), a Luxembourg-incorporated private gold investment company, through a private placement of common shares. Following receipt of the funds, La Mancha was issued 32,642,100 common shares on a post-Consolidation basis, representing approximately 30% of the outstanding share capital (on a non-diluted basis) after giving effect to La Mancha's investment. Pursuant to the transaction, La Mancha received customary anti-dilution and demand registration rights and is subject to a two-year equity lock-up, as well as to certain customary standstill provisions until October 1, 2020. Two new directors were also appointed to the Company's board of directors (the "**Board**") pursuant to La Mancha's right to appoint up to three nominees. Andrew Wray, former Chief Executive Officer of La Mancha, and Graham Crew, La Mancha's second nominee, joined the Board effective October 1, 2018. This relationship secured the Company's platform for growth in Africa, while also strengthening the Company's balance sheet.
- October 18 The Company consolidated its common shares on the basis of one post-Consolidation common share for every five pre-Consolidation common shares. The Consolidation reduced the Company's common share count from approximately 544.0 million outstanding common shares pre-Consolidation to approximately 108.8 million outstanding common shares post-Consolidation. The Company's shares commenced trading on a post-Consolidation basis on the TSX and NYSE on October 30, 2018.

2019

- February 19 The Company announced an updated mineral resource estimate at Father Brown consisting of the Father Brown Zone and Adoikrom Zone. Inferred mineral resources increased from 246,000 ounces at year end 2017, to 474,743 ounces, representing a 93% increase.
- March 18 The Company announced that it had received approval from the Board to commence a normal course issuer bid to purchase up to an aggregate of 5,440,950 common shares, representing approximately 5% of the issued and outstanding shares as of March 15, 2019. The Company may, if considered advisable, purchase common shares through the facilities of NYSE from time to time through to March 24, 2020. As of March 24, 2020, the Company had not purchased any common shares.
- March 28 The Company announced its mineral reserves and mineral resources estimate as of December 31, 2018 with a 6% increase in total mineral reserves after depletion, including a 47% increase in Wassa Underground mineral reserves.
- May 1 Andrew Wray was appointed President and Chief Executive Officer of Golden Star.
- June 24 An updated technical report entitled "NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources, Wassa Gold Mine, Ghana" effective December 31, 2018 was filed.
- July 8 Graham Crew was appointed Executive Vice President and Chief Operating Officer.

- August 8 The Company established a discretionary gold price protection program (the "**Hedging Program**") to provide gold price protection for the projected production from the Prestea Mine over the next 12 months as the results of the ongoing operational review were implemented at the operation. Zero cost collars, with a \$1,400 per ounce floor and a \$1,750 per ounce ceiling, were put into place for 50,000 ounces of gold over a 12-month period. The gold hedges, which were arranged through Macquarie Bank Limited ("**Macquarie**"), mature on a monthly basis at a frequency of approximately 4,167 ounces per month.
- September 10 The Company consented to La Mancha acquiring up to an additional 5% of the issued and outstanding common shares of the Company through ordinary market or block trade purchases. The Investor Rights Agreement entered into between Golden Star and La Mancha on August 1, 2018 (the "**Investor Rights Agreement**") in connection with La Mancha's equity investment of US\$125.7 million to acquire a 30% stake in Golden Star, restricts La Mancha from acquiring any additional common shares beyond 30% until October 2020 without the prior consent of Golden Star. Accordingly, the Investor Rights Agreement was amended and now restricts La Mancha from acquiring any additional common shares beyond 35% until October 1, 2020 without the prior consent of Golden Star. All of the other terms of the Investor Rights Agreement continue to be in force in accordance with their terms.
- October 17 The Company closed a \$60 million senior secured credit facility with Macquarie (the "**Credit Facility**"). Golden Star used the proceeds to refinance the Ecobank Loan III, Ecobank Loan IV, and a long-term payable under a vendor agreement with Volta River Authority. The remaining balance is available for general corporate purposes. The principal amount of the Credit Facility is repayable as to \$5 million quarterly, commencing on June 30, 2020. The final maturity date is March 31, 2023. The interest rate is 4.5% plus the applicable USD LIBOR rate. The Credit Facility is subject to normal course financial covenants including a Debt Service Coverage Ratio of greater than 1.20:1 and a Net Debt to EBITDA ratio of less than 3.00:1.
- October 22 The Company announced that it planned to close its Toronto office by April 30, 2020, that its executive team would be located in London, England and that André van Niekerk, Executive Vice President and Chief Financial Officer, had decided not to accept the offer to move to London and expected to leave the Company by April 30, 2020. The Company also announced the appointment of Nathalie Lion Haddad as Executive Vice President, Head of People and Peter Spora as Executive Vice President, Growth & Exploration.
- November 25 The Company announced the appointment of Philipa Varris as Executive Vice President, Head of Sustainability of Golden Star.

2020 to date

- January 22 The Company announced its preliminary production results for the fourth quarter totalling 204koz, delivering on the upper end of the 190 - 205koz revised guidance range. The Company ended 2019 with \$53.4 million of cash. Additionally, the Company announced that Paul Thomson would join the Company as Executive Vice President and Chief Financial Officer on January 27, 2020 and would work with André van Niekerk during the transition period.
- February 3 The Company announced the appointment of Karim Nasr to the Board placing Naguib Sawiris as a nominee of La Mancha.
- March 3 La Mancha announced that it had acquired an aggregate of 2,416,356 common shares in connection with Golden Star's previously announced consent to La Mancha acquiring up to an additional 5% of the outstanding common shares of Golden Star through ordinary market or block trade purchases. Following such acquisition, La Mancha, through its wholly owned subsidiary, La Mancha Star Investments S.à r.l., now beneficially owns and has control and direction over an aggregate of 35,058,456 common shares of Golden Star representing approximately 32% of the issued and outstanding common shares.
- March 6 The Company announced its Policy on Inclusion and Diversity to mark International Women's Day and the 25th anniversary of the adoption of the Beijing Declaration and Platform for Action.

DESCRIPTION OF THE BUSINESS

GOLD SALES AND PRODUCTION

Golden Star produced 203,769 ounces of gold in 2019 and 224,784 ounces of gold in 2018. Currently, approximately 90% of the Company's gold production is sold through a South African gold refinery. Except for the sales to RGLD as part of the Stream Transaction, the refinery arranges for sale of gold. The Company's gold is sold in the form of doré bars that average approximately 90% gold by weight with the remaining portion being silver and other metals. The sales price for spot sales is typically based on the London P.M. fix on the day of shipment to the refinery.

Until the end of 2017, pursuant to the Stream Transaction, the Company sold 9.25% of its total gold production to RGLD at 20% of the spot price. Beginning in 2018, the Company began selling 10.5% of its gold production at 20% of the spot gold price to RGLD until 240,000 ounces have been delivered pursuant to the Stream Transaction. As of December 31, 2019, 100,181 ounces had been delivered to RGLD. Once 240,000 ounces have been delivered, pursuant to the Stream Transaction, the Company will commence selling 5.5% of its gold production at 30% of the spot gold price to RGLD, subject to certain potential adjustments that the parties may implement in accordance with the terms of the Stream Transaction. (See "Three Year History" section for more information on the Stream Transaction).

GOLD PRICE HISTORY

The price of gold is volatile and is affected by numerous factors all of which are beyond the Company's control such as the sale or purchase of gold by various central banks and financial institutions, inflation, fluctuation in the relative values of the U.S. dollar and foreign currencies, changes in global and regional gold demand, and the political and economic conditions of major gold-producing countries throughout the world.

The following table presents the high, low and average London P.M. fixed prices for gold per ounce on the London Bullion Market over the past ten years, as well as the average gold price received by Golden Star after giving effect to the Stream Transaction.

Year	High	Low	Average	Average Price Received by Golden Star
2010	1,421	1,058	1,225	1,219
2011	1,895	1,319	1,572	1,564
2012	1,792	1,540	1,670	1,662
2013	1,694	1,192	1,411	1,414
2014	1,385	1,142	1,266	1,261
2015	1,297	1,049	1,160	1,151
2016	1,366	1,077	1,251	1,211
2017	1,346	1,151	1,257	1,219
2018	1,355	1,178	1,268	1,225
2019	1,546	1,270	1,393	1,342

BUSINESS STRATEGY AND DEVELOPMENT

The Company's business and development strategy is focused primarily on the exploration, development and operation of gold properties in Ghana and the broader West African region.

The Company acquired the Bogoso property and began operating its mines and carbon-in-leach ("CIL") processing plant in 1999. In 2001, the Company acquired the Prestea property located adjacent to the Bogoso property. In early 2002, GSBPL acquired a 45% interest in the Prestea Underground property and, since then, the Company's interest has increased to 90%.

In late 2002, the Company acquired Wassa and constructed the Wassa processing plant, which began commercial operation in April 2005. In July 2007, the Company completed construction and development of the Bogoso/Prestea refractory plant. The refractory operation at Bogoso was suspended in the third quarter of 2015.

From 2016 to 2018, the company focussed on developing higher grade deposits such as the Mampon open pit and underground mines at Prestea and Wassa.

Wassa achieved commercial production in 2017 and continued operations throughout 2019. Wassa has continued focus on operational efficiencies within the defined reserve through projects such as the paste backfill plant, as well as progressing development of the large inferred resource being defined south of current operations to build a long and low-cost mine life.

Since declaring commercial production in 2018, Prestea underground has under-performed which resulted in management initiating an independent review of the operation in 2019. The result of that review and subsequent updated life-of-mine plan show that improved productivity and reduced unit costs can be achieved through revised geotechnical design parameters for Alimak stopes, introduction of SLO mining method and achieving improved operational efficiencies through initiatives in Project Okode. The focus at Prestea in the near term is securing the future of the operation through successful implementation of these changes.

Customers

Gold can be readily sold on numerous markets throughout the world and its market price can be readily ascertained at any time. Because there are a large number of gold purchasers, the Company is not economically dependent upon the sale of gold to any one customer.

Currently all of the Company's gold production is shipped to a South African gold refinery. The refinery arranges for the sale of the gold on the day it is shipped from the mine site and the Company receives payment for the gold sold two working days after the gold leaves the mine site. A percentage of the Company's gold production is also sold to RGLD pursuant to the Stream Transaction. The global gold market is competitive with numerous banks and refineries willing to buy gold on short notice. Therefore, the Company believes that the loss of any of its current customers would not materially delay or disrupt revenues.

Employees

As of December 31, 2019, Golden Star, including its majority-owned subsidiaries, had approximately 652 full time employees and approximately 702 fixed term employees, for a total of 1,354 a 6.95% increase from approximately 690 full time and 576 contract employees at the end of 2018.

Competition

The Company's competitive position depends upon its ability to successfully and economically acquire, explore, develop and operate new and existing gold properties. Factors that allow gold producers to remain competitive in the market over the long term include the quality and size of ore bodies, cost of operations, and the acquisition and retention of qualified employees. The Company competes with other mining companies in the acquisition, exploration, financing and development of new mineral properties. There is significant competition for a limited number of gold acquisition and exploration opportunities. The Company also competes with other mining companies for skilled mining engineers, mine and processing plant operators and mechanics, geologists, geophysicists and other experienced technical personnel, as well as for mining equipment.

Seasonality

All of the Company's operations are in tropical climates that experience annual rainy seasons. During periods when the Company is mining from the surface, ore output from the Company's surface mining operations can be reduced during wet periods. The Company's mine plans anticipate periods of high rain fall each year. Exploration activities are generally timed to avoid the rainy periods to ease transportation logistics associated with wet roads and swollen rivers.

MINING IN GHANA

OPERATIONS IN GHANA

Ghana is situated on the west coast of Africa, approximately 600 km north of the Equator on the Gulf of Guinea.

Accra, the capital city of Ghana, is located almost exactly on the Prime Meridian. The former British colony changed its name from the Gold Coast to Ghana on achieving independence on March 6, 1957. Ghana is now a republic with a population of approximately 28 million people and a democratically elected government. English remains the official and commercial language.

The total area of the country is approximately 238,000 square km and the topography is relatively flat. Ghana has a tropical climate with two rainy seasons and two dry seasons each year. The natural vegetation in the Western Region where Golden Star has its two operations is moist tropical forest, now found only in forest reserves, with a majority of the land converted into agricultural pursuits.

The Ghanaian legal system is generally modelled after and based on the British common law. The laws of Ghana include the Constitution, national laws passed by Parliament (or under authority granted by Parliament) and the common law of Ghana. The common law of Ghana includes customary rules which apply to particular communities in Ghana and which may or may not be consistent with the Constitution or a specific national law.

During the time in which the Company has carried out mining operations at Wassa and Bogoso/Prestea, Ghana has generally been a politically and economically stable country. Further, in the Company's experience, Ghanaian customs do not materially impact its operations in Ghana.

GHANAIAN OWNERSHIP AND SPECIAL RIGHTS

The Constitution of Ghana vests title in every mineral in its natural state to the Government of Ghana. The exercise of any mineral right in the form of reconnaissance, exploration or exploitation of any mineral in Ghana requires an appropriate licence or mineral right to be issued by the Government of Ghana acting through the Minister responsible for Lands and Natural Resources. The Minister responsible for Lands and Natural Resources administers, promotes and regulates Ghana's mineral wealth through the Minerals Commission, a governmental organization designed in accordance with the Minerals Commission Act 1993 and the Minerals and Mining Act 2006 (the "**2006 Mining Act**").

Pursuant to the 2006 Mining Act, a number of regulations were passed in 2012 to clarify and implement provisions of the 2006 Mining Act. These regulations relate to matters such as licensing, local content, technical issues, mineral right holding costs, mine support services and payment of compensation to persons impacted by mining operations.

A corporate body duly registered in Ghana can apply to the Minerals Commission for a renewable exploration licence granting exclusive rights to explore for a particular mineral in a selected area for an initial period not exceeding three years. When exploration

has successfully delineated a mineral reserve, an application may be made to the Minerals Commission for conversion to a mining lease, granting a company the right to produce a specific product from the concession area.

Once a licence or mineral right is issued to an entity by the Government of Ghana, Ghanaian mining laws prevent that licence or mineral right from being transferred, assigned or mortgaged by the licensee or mineral right holder without the prior written approval of the Government of Ghana. The Ghana Minerals Commission is also required to maintain a public register of all applications, grants, variations, transfers, suspensions and cancellations of such licences or mineral rights. Official searches may be conducted in the public register to obtain information regarding any licence or mineral right granted by the Government of Ghana.

In order to confirm the Company's title in its material mineral properties, the Company will, from time to time, obtain legal opinions from its local Ghanaian counsel regarding such title. With respect to each of Wassa and Bogoso/Prestea properties, on September 24, 2018, the Company received title opinions from Ghanaian counsel confirming that each of GSBPL and GSWL is the holder of the applicable mineral rights in each property and that such mineral rights are in good standing, and are subject only to those statutory rights and options conferred on the Government of Ghana by the 2006 Mining Act. In order to render such opinions, Ghanaian counsel reviewed, among other things, the mining leases relating to the material resource properties, and conducted official title searches at appropriate governmental registries. In addition, the Company relies on its in-house tenement officers and the services of local experts, including local external legal counsel, to ensure that its operating subsidiaries in Ghana comply with applicable legal and regulatory requirements relating to the ownership and operation of its material mineral properties and assets in Ghana.

The Company has obtained the following leases from the Government of Ghana: (i) one mining lease over Prestea surface dated October 13, 1994, for a term of 30 years, subject to renewal; (ii) one Prestea Underground lease dated June 29, 2001, for a term of 30 years, subject to renewal; (iii) two mining leases over Bogoso dated August 21, 1987, and August 16, 1988, each for a term of 30 years (both mining leases have expired and renewal processes are far advanced with the payment of the prescribed application fees made on September 15, 2017), lease documents have been received, endorsed/sealed and returned to Mincom on February 21, 2020; (iv) three mining leases over Wassa, with the first lease dated September 17, 1992, for a term of 30 years, subject to renewal, and two other leases (Hwini Butre and Benso) dated December 31, 2012, for a term of six years. The Hwini Butre and Benso leases have expired and the Minerals Commission has agreed to extend the Hwini Butre lease for 20 years, subject to the payment of the prescribed processing fees in a letter dated January 14, 2020. The Benso renewal application is yet to be considered; (v) one mining lease over Mampon, dated October 17, 2016, for a term of 10 years, subject to renewal; and (vi) one mining lease over Opon, dated August 2, 2019, for one year, subject to renewal.

With respect to Wassa and Bogoso/Prestea, in addition to mining leases, the Company requires the following permits, licences or other regulatory approvals to be able to carry out business operations in Ghana: (i) environmental permits; (ii) approved environmental management plans and environmental certificates; (iii) reclamation bonds and approved reclamation plans; (iv) water usage permits; (v) business operating permits; (vi) licences to export, sell or dispose of minerals; (vii) permits/licences to retain a specified percentage of mineral export proceeds for purposes of debt servicing, dividend payment to foreign shareholders and acquisition of plant and machinery for the mining project; (viii) permits to operate foreign exchange retention accounts with a trustee bank; and (ix) immigration quotas to employ a specified number of non-Ghanaians to work on mining projects.

Golden Star, through its applicable subsidiaries, holds all licences, permits, and regulatory approvals necessary in order to carry on mining operations at or in relation to the mines located on the Prestea, Prestea Underground, Wassa, Wassa Underground and Bogoso (where refractory mining is currently suspended) properties, as currently carried out and to transport, handle, export and

sell the gold produced from such mines. The Company is not aware of significant factors unique to the Company or its properties that may affect access, title, or the right or ability to perform the Company's proposed work in respect of its mineral projects. The Company conducts its operations in all material respects in compliance with applicable Ghanaian laws.

The 2006 Mining Act requires that any person who intends to acquire a controlling share of the equity of any mining company that has been granted a mineral right, must first give notice of its intent to the Government of Ghana and also obtain its consent prior to acquiring a controlling share.

Under the 2006 Mining Act, the Government of Ghana holds a 10% free-carried interest in all companies that hold mining leases. The 10% free-carried interest entitles the Government to a pro-rata share of future dividends. The Government has no obligation to contribute development capital or operating expenses. GSBPL and GSWL owe \$1,221.6 million and \$30.5 million, respectively, to Golden Star or its subsidiaries as of December 31, 2019, for past advances and these amounts would be repaid before payment of any dividends to the Government of Ghana.

Under the 2006 Mining Act, the Government of Ghana is empowered to acquire a special or golden share in any mining company. The special share would constitute a separate class of shares with such rights as the Government and the mining company might agree. Though deemed a preference share, it could be redeemed without any consideration or for a consideration determined by the mining company and payable to the holder on behalf of the Government of Ghana.

In the absence of such agreement, the special share would have the following rights:

- it would carry no voting rights, but the holder would be entitled to receive notice of, and to attend and speak at, any general meeting of the members or any separate meeting of the holders of any class of shares;
- it could only be issued to, held by, or transferred to the Government of Ghana or a person acting on behalf of the Government;
- the written consent of the holder would be required for all amendments to the organizational documents of the company, the voluntary winding-up or liquidation of the company, or the disposal of any mining lease, or the whole or any material part of the assets of the company;
- it would not confer a right to participate in the dividends, profits or assets of the company or a return of assets in a winding up or liquidation of the company; and
- the holder of a special share may require the company to redeem the special share at any time for no consideration or for a consideration determined by the company.

GSBPL and GSWL have not issued, nor to date have they been requested to issue, a special share to the Government of Ghana. To Golden Star's knowledge, for as long as Golden Star has been operating in Ghana, no mining company has been requested to issue a special share.

The Government of Ghana has a pre-emptive right to purchase all gold and other minerals produced by mines in Ghana. The purchase price would be agreed by the Government of Ghana and the mining company, or the price established by any gold hedging arrangement between the Company and any third party approved by the Government, or the publicly quoted market price prevailing for the minerals or products as delivered at the mine or plant where the right of pre-emption was exercised. The Government of Ghana has agreed to take no pre-emptive action pursuant to its right to purchase gold or other minerals so long as mining companies sell gold in accordance with certain procedures approved by the Bank of Ghana. The Company sells its gold in compliance with these procedures.

OVERSIGHT OF FOREIGN OPERATING ENTITIES

The Board and senior management team have considerable experience conducting business in Ghana and elsewhere in Africa and certain members of the Company's senior management team reside in Ghana. In addition, Mr. Andrew Wray, the President, Chief Executive Officer and a director of Golden Star, is also a director of the Foreign Operating Entities. Golden Star maintains oversight over the operations and assets of the Foreign Operating Entities by electing the directors and appointing the officers of those subsidiaries, as well as removing such directors and officers from time to time. Golden Star, as the parent entity, holds the majority of the funds of the consolidated corporate group in its North American bank accounts. Golden Star generally provides funds to the Foreign Operating Entities as needed through intercompany loans and receives funds from its foreign subsidiaries as loan repayments. In addition, Golden Star provides management and other services to the Foreign Operating Entities and is reimbursed for those expenses and services. Management of Golden Star directs, and must consent to, all material decisions being made at the Foreign Operating Entity level. As a result, the operations and business objectives of Golden Star and the Foreign Operating Entities are effectively aligned.

As a reporting issuer in the United States, the Company must comply with the controls and reporting provisions set out in the Sarbanes-Oxley Act of 2002. As such, the Company has established a control matrix for each mining site and controls at each corporate level. The Company's internal controls include policies and procedures that pertain to the maintenance of records that accurately and fairly reflect, in reasonable detail, the transactions and dispositions of assets of the Company and that are intended to provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the Company's consolidated financial statements. The minute books and corporate records of the Foreign Operating Entities are maintained with those subsidiaries and are under the indirect control of Golden Star.

The Company hires and engages local experts and professionals (i.e. legal and tax consultants) to advise the Company with respect to current and new regulations in Ghana in respect of banking, financial and tax matters. The Company utilizes established and well recognized financial institutions in both Canada and Ghana. There are no material differences between day-to-day banking operations in Ghana and those in Canada. The Company also uses local counsel and local consultants to assist it with its government relations. Members of management of the Company also have direct contacts and good relationships at all relevant levels of Government in Ghana.

As a result of the foregoing, the Company is of the view that any risks associated with its corporate structure and its foreign operations are minimal and effectively managed by Golden Star based on the controls described above.

GHANAIAN ROYALTY

Ghanaian law sets mineral royalties at a flat rate of 5% of mineral revenues. The Company incurred royalty expense of \$14.2 million and \$14.3 million in 2019 and 2018, respectively.

GHANAIAN CORPORATE TAX

The Ghana corporate income tax rate for 2019 for mining companies was 35%, which remains unchanged from 2018. Additionally, the use of capital allowances (tax depreciation) may be claimed at a flat rate of 20% per year over a five-year period, which remains unchanged from 2018. The Ghana tax regime taxes each mineral operation as a separate business and does not allow expenditures from one mining area to be deducted from revenues in a separate mining area, even if the mineral operations are owned by the same entity.

The current Income Tax Act (“**ITA**”) was passed by Ghana’s Parliament and assented to by the President on September 1, 2015, on which date the ITA came into force. Changes resulting from the new ITA may impact the Company by accelerating the expiry of some of the Company’s tax attributes.

ENVIRONMENTAL AND OTHER LAWS AND REGULATIONS

In the various jurisdictions where the Company operates, all phases of its exploration, project development, and operations are subject to environmental laws and regulations. These laws and regulations may define, among other things, air and water quality standards, waste management requirements, and closure and rehabilitation obligations. In general, environmental legislation is evolving to require stricter operating standards, more detailed socio-economic and environmental impact assessments for proposed projects, and a heightened degree of accountability for companies and their officers, directors, and employees for corporate social responsibility, and health and safety. Changes in environmental regulations, and the way they are interpreted by the regulatory authorities, could affect the way we operate, resulting in higher environmental and social operating costs that may affect the viability of the Company’s operations.

Environmental matters in Ghana, including those related to mining, fall primarily under the oversight of the Environmental Protection Agency (“**EPA**”), as well as the Minerals Commission and their Mines Inspectorate Division. The EPA has acts and regulations that govern, among other things, environmental and socioeconomic impact assessments and statements, environmental management plans, emissions to the environment, environmental auditing and review, and mine closure and reclamation, to which the Company’s operations are subject. Additional provisions governing mine environmental management are provided in the 2006 Mining Act and Minerals and Mining Regulations, 2012.

The Company has noted a continuing trend toward substantially increased environmental requirements and evolving corporate social responsibility expectations in Ghana, including the requirement for more permits, analyses, data gathering, community hearings, and negotiations than have been required in the past for both routine operational needs and for new development projects. The trend to longer lead times in obtaining environmental permits has reached a point where the Company is no longer able to accurately estimate permitting times for the Company’s planning purposes. The increases in permitting requirements could affect the Company’s environmental management activities including, but not limited to, new projects, tailings storage facilities, water management, and rehabilitation and closure planning implementation at its mines.

The Company’s mining, processing, development, and mineral exploration activities are also subject to various laws governing prospecting, development, production, taxes, labour standards, occupational health and safety, land rights of local people and other matters. New rules and regulations may be enacted or existing rules and regulations may be modified and applied in a manner that could have an adverse effect on the Company’s financial position and results of operations.

The Company uses hazardous chemicals in the Company’s gold recovery activities, and thus generates environmental contaminants that may adversely affect air, land and water quality. To mitigate these effects, the Company has established objectives to achieve regulatory requirements in the Company’s exploration, development, operation, closure, and post-closure activities so that its employees, the local environment, and its stakeholder communities are protected and that the next land use contributes to the sustainability of the local economy. In order to meet these objectives, Golden Star:

- educates its managers so that they are committed to creating a culture that makes social and environmental matters an integral part of short-term and long-term operations and performance management systems;

- works with its employees so they understand and accept environmental and social policies and procedures as a fundamental part of the business;
- signed and publicly stated its support for the UN Global Compact, completed its commitments that are provided in our communications on progress and continues to implement actions in support of the UN Sustainable Development Goals;
- establishes, and continues to improve, operating standards and procedures that aim to meet or exceed requirements in relevant laws and regulations, the commitments made in our environmental impact statements, environmental and socioeconomic management plans, rehabilitation and closure plans, and any international protocols to which it is a signatory;
- incorporated environmental and human rights performance requirements into relevant contracts;
- provides training to employees and contractors in environmental matters;
- regularly prepares, reviews, updates, and implements site-specific environmental management and rehabilitation and closure plans;
- works to progressively rehabilitate disturbed areas in conformance with site-specific environmental plans, in the context of the life of mine plans;
- consults with local communities and regulators to inform on its environmental management policies and procedures;
- regularly reviews its environmental performance;
- conducts quarterly audits to review performance and safety of our tailings storage facilities by the engineer of record as well as quarterly audits by a third party auditor;
- participates in audits by both the EPA and Minerals Commission of health, safety and environment;
- completes its resettlement projects in accordance with the International Finance Corporation Performance Standard 5 on Land Acquisition and Involuntary Resettlement; and
- publicly reports its social, health, safety and environmental performance.

Rehabilitation activities were ongoing at both Wassa and Bogoso/Prestea during 2019 with most activity at the Bogoso North extension, Mampon and GSBPL TSF 2 Cell 3 and GSWL TSF 1 oil palm plantations. The Company's ongoing rehabilitation includes re-profiling waste dumps, capping reactive rock with compacted oxide material, topsoil spreading, and planting for both slope stabilization and long-term rehabilitation. The Company's consolidated reclamation expenditures totaled \$3.2 million, \$5.3 million and \$6.0 million in 2019, 2018 and 2017, respectively.

In 2018, Golden Star was recognized by the Prospectors and Developers Association of Canada ("PDAC") with the PDAC Environmental and Social Responsibility Award and has been recognized for the fourth year in succession at the Ghana Mining Industry Awards in the category of Corporate Social Investment Project of the Year. Golden Star continued to communicate its corporate responsibility activities via social media and a corporate social responsibility blog: www.goldenstarinthecommunity.blogspot.com.

CORPORATE SOCIAL RESPONSIBILITY

In keeping with the Company's health, safety and well-being, environmental, community relations, community development and support and human rights policies, the Company strives to conduct its business as a responsible corporate citizen. Golden Star believes its ongoing success in Ghana depends on its continuing efforts to build good relations with its local stakeholder communities, and by reviewing broader stakeholder comments and addressing stakeholder concerns in its developing projects and

ongoing operational activities. The Company believes its success as an employer, as a neighbor, and as an important part of the local and national economy is furthered by contributing to the diversification of the local economy with initiatives such as its Golden Star Oil Palm Plantation (“**GSOPP**”) and by its support of community-driven development projects through its Golden Star Development Foundation (the “**Foundation**”). During 2019, the Foundation worked with the Company’s local Community Mine Consultative Committees to fund and sponsor several community-driven projects including community centres for host communities and scholarships for local students. Additionally, in 2019, GSWL signed a Memorandum of Understanding with its host communities to formalise approaches on relationship and sustainable livelihoods, Development Foundation support, as well as local employment and procurement participation.

In recognition of our long-running commitment to community development, our Standard for Facilitation and Discretionary Payments, which operationalizes the Golden Star Policy on Community Development and Support, was the subject of training for all key leaders in 2019. Critically, this standard supports the Company’s intent to ensure that our support is culturally and traditionally acceptable while upholding the tenants of national and international anti-corruption law.

Golden Star’s multi-award winning, social enterprise initiative, GSOPP now encompasses 1,337 hectares of plantations, 200 hectares of which are on former mined lands, employing 317 small holder or out-grower farmers, and over 330 contract workers. The majority of the plantations are now in fruiting maturity, with over 76,000 tonnes of fresh fruit bunches produced since inception. Yields remain higher than national averages, and farmer incomes are optimal as palms have reached maturity. Socioeconomic surveys of GSOPP beneficiaries in 2018 illustrate the importance of this social enterprise initiative to sustainable poverty reduction and wealth creation for local host communities.

Golden Star also supports a skills training program for stakeholders aimed at local economic development. The Golden Star Skills Training and Employability Program (“**GSSTEP**”) has, since its inauguration in 2009, provided employable skills to 680 youth in skills ranging from commercial cookery and carpentry, to mobile phone repairs and mining disciplines. In 2018, an evolution of the GSSTEP initiative was piloted under the title Golden Star Learning and Earning Program (“**GSLEP**”). Under the program, trainees constructed a second storey classroom block under trade supervision. Golden Star is now supporting the group with a view to facilitating the development of a local community company in line with our objectives for host community economic development.

Golden Star’s objectives for community development align closely with the objectives of the Deutsche Gesellschaft für Internationale Zusammenarbeit (“**GIZ**”), and in 2019 a Memorandum of Understanding was reached for a new partnership collaboration to retain and enhance shared value through skills and enterprise development.

In 2019, the Company continued to focus on increasing local procurement participation and local content at its sites. Following the successful 2018 pilot initiative that gave rise to a local contracting collaboration (“**LOCOMS**”), where 18 local companies supply haulage trucks, hire equipment and provide dust suppression and sanitation services to the Company’s operations, in 2019 a new contract was signed with local companies for supply of uniforms. Since their inception, the LOCOMS companies have attracted over \$32 million in goods and services value that previously would have been won by larger Accra-based or international mining services suppliers.

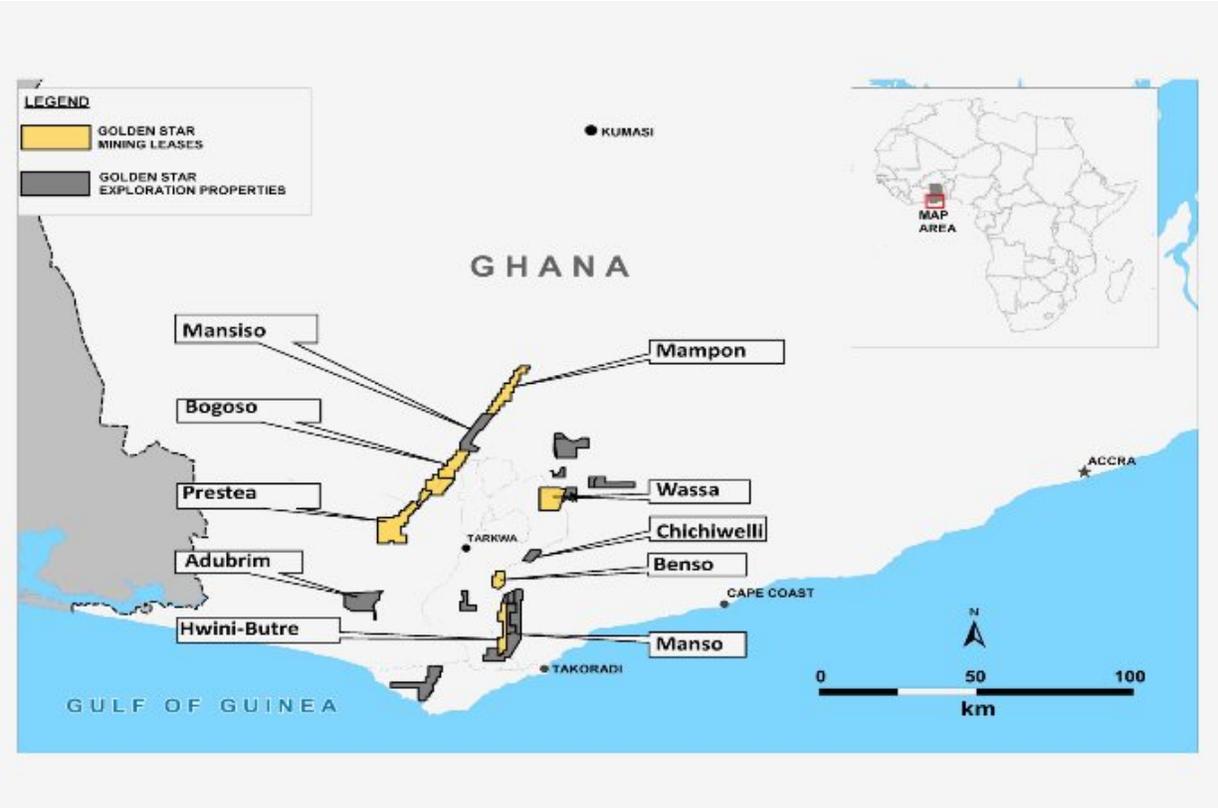
In 2019, Golden Star continued focus on enhancing local content with 53% of our employees and 54% of our contractors hailing from our host communities. Of our workforce, 63% come from the Western Region of Ghana where our operations are located and 98% are Ghanaian.

In response to the COVID-19 outbreak and the potential impact it may have on our operations, we have established measures to best ensure the wellness of our employees and surrounding communities where we work while continuing to operate. Currently, all corporate personnel are working remotely and corporate travel has been suspended. At our operations in Ghana, we have implemented many management controls. These include the update of our Epidemic and Pandemic Management Plan, site access screening protocols (including contact tracing and temperature screening), cessation of international inbound travel to Ghana and the requirement for self-quarantine, as well as the implementation of education and awareness programs and enhanced hygiene and sanitation controls amongst others. We expect that our control implementation will continue to evolve in response to the predefined triggers identified through situation monitoring conducted by our medical services providers, the World Health Organization (the “WHO”) and Center for Disease Control as more becomes known about the virus.

DESCRIPTION OF THE PROPERTIES

MAP OF OPERATIONS AND PROPERTIES

The map below shows the locations of, among other mineral concessions, Bogoso/Prestea and Wassa. These properties are described in further detail below.



GOLDEN STAR MATERIAL PROPERTIES

The technical and scientific information in this Annual Information Form has been prepared under the supervision of, or reviewed by Mr. S. Mitchel Wasel and Mr. Matthew Varvari, each a QP under NI 43-101 and an officer of the Company.

Technical Reports

Certain information in this section in respect of Wassa and Bogoso/Prestea is based upon the following technical reports (collectively, the “**Technical Reports**”):

- *Wassa* – “NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources, Wassa Gold Mine, Ghana” effective date December 31, 2018, and filed on June 24, 2019, and prepared by Dr. Martin Raffield, Mr. S. Mitchel Wasel and Ms. Philipa Varris, each of whom is a QP for the purposes of NI 43-101 (the “**Wassa Technical Report**”); and
- *Bogoso/Prestea* – “NI 43-101 Technical Report on Resources and Reserves Golden Star Resources Ltd., Bogoso/Prestea Gold Mine, Ghana” effective date December 31, 2017, and filed on March 29, 2018, and prepared by Dr. Martin Raffield and Mr. S. Mitchel Wasel, each of whom is a QP for the purposes of NI 43-101 (the “**Bogoso/Prestea Technical Report**”).

The Technical Reports have been filed with the Canadian securities regulatory authorities pursuant to NI 43-101 and are available for review electronically on SEDAR at www.sedar.com.

Wassa Gold Mine

Project Description and Location

Golden Star, through its subsidiary GSWL, owns 90% of and operates the Wassa mine (the “**Wassa Mine**”), and the CIL processing plant in the Western Region of Ghana. Wassa includes several open-pit mines, an underground mine, a 2.7 Mtpa processing plant, tailings storage facilities, equipment repair shops and ancillary facilities, including an administration building, a warehouse, a maintenance shop, an 8 megawatt stand-by power generating facility and an employee residential complex. Wassa Underground commenced commercial production on January 1, 2017. The Company had been mining the Wassa open pits since commissioning the processing plant in 2005. In 2015, SRK Consulting prepared a feasibility study regarding the economic viability of an underground mine beneath the Wassa pit. Development of the Wassa Underground mine commenced in July 2015 and commercial production was achieved on January 1, 2017. In January 2018, Wassa transitioned to an underground-only operation.

The Wassa complex is located near the village of Akyempim in the Wassa East District in the Western Region of Ghana. It is 62 km north of the district capital, Daboaase, and 40 km east of Bogoso. It is located 80 km north of Cape Coast and 150 km west of the capital Accra. The main access to the site is from the east, via the Cape Coast to Twifo-Praso road, then over the combined road-rail bridge on the Pra River. There is also an access road from Takoradi in the south via Mphor.

Accessibility, Climate, Local Resources, Infrastructure and Physiography

The services, infrastructure, and community support required by the Wassa complex is in place. The following are relevant to the assessment of resources and infrastructure:

- access is via the public road network that extends on to the mine complex;
- electricity and water are available;
- surface infrastructure in the area consists of a variety of government, municipal, and other roads with good overall access;
- processing will be carried out at the Wassa processing plant;
- tailings are stored in the existing approved TSF1 or TSF2 (each of which as defined in the “Wassa Gold Mine” section below), which have sufficient design capacity for the life of mine tailings production;

- waste rock generated at the site is backfilled into former pit areas or placed in extensions to existing waste dumps, near the Wassa open pit;
- the Wassa expansion project incorporating commercial level underground mining, pit expansion and waste dump extension was invoiced for permitting by the EPA in November 2016, and the permit was issued in October 2018 with an effective date of October 2017; and
- the extensive history of mining in Ghana provides opportunities to obtain skilled underground mine workers.

The climate in the project area is classified as wet semi-equatorial. The area experiences a bi-modal rainfall pattern, with peaks in March to July and September to October.

Analysis of available rainfall data, obtained from the Ateiku Meteorological survey (1944 to 2009) indicates that the average annual rainfall is 1,996 (\pm 293) mm. The wettest month of the year is generally June, with an average rainfall of about 241 (\pm 85) mm, while January is the driest month of the year with an average rainfall of about 31 (\pm 35) mm.

Under such climatic conditions surface mining operations can generally continue year-round with short breaks during storms, most of which are short-lived and may be experienced throughout most of the year. Underground mining operations are not directly affected by storms because storm water management infrastructure is in place at surface to divert runoff from mine accesses. Relative humidity is fairly constant throughout the year, ranging from 88% to 90%.

The project area is characterized by gently rolling hills with elevations up to 50 m and 100 m above sea level, incised by an extensive drainage network. The natural vegetation of the Wassa project area is an ecotone of the moist, semi-deciduous forest and wet rainforest zones. It has been degraded due to anthropogenic activities, giving way to broken forest, thickets of secondary forest, forb re-growth, swamps in the bottom of valleys, and cleared areas. Extensive subsistence farming occurs throughout the area, with plantain, cassava, pineapple, maize, and cocoyam being the principal crops. Some small-scale cultivation of commercial crops is also carried out, with cocoa, teak, coconuts and oil palm being the most common. Forest patches are present on the steep slopes and in areas unsuitable for agriculture.

Environmental assessments carried out in the project area over the last two decades indicate that the biodiversity of the Wassa operational area is of low ecological significance and conservation status.

History

The Wassa area has witnessed several periods of local small scale and colonial mining activity from the beginning of the 20th century and mining of quartz veins and gold bearing structures are evident from the numerous pits and adits covering the Wassa Lease area.

From 1988, the property was operated as a small-scale mining operation with a gravity gold recovery circuit by a Ghanaian company, Wassa Mineral Resources Limited (“**Wassa MRL**”). In 1993, Wassa MRL was looking for a capital partner to further develop the mining lease and invited the Irish companies Glencar Exploration Limited (“**Glencar**”) and Moydow Ltd. (“**Moydow**”) to visit the concession. Following this visit, Satellite Goldfields Limited (“**SGL**”) was formed between Wassa MRL, Glencar and Moydow. The mining lease, which is valid for a 30-year period expiring in 2022, was assigned by Wassa MRL to SGL.

Extensive satellite imagery and geophysical interpretations were carried out, which identified a strong gold target (>1 g/t Au). Exploration drilling commenced in February 1994, and by March 1997 a total of 58,709 metres of reverse circulation (“**RC**”) and diamond drilling (“**DD**”) had been completed. In September 1997, consulting engineers Pincock, Allen and Holt completed a

feasibility study, which determined a proven and probable mineral reserve of 17.6 Mt at 1.7 g/t Au, for a total of 932,000 contained ounces of gold. The reporting code, and key assumptions and parameters used to report this are not known and a QP has not done sufficient work to classify this historical estimate as a current mineral resource or mineral reserve. Hence, the Company is not treating the historical estimate as a current mineral resource or mineral reserve. Construction of Wassa Main was initiated in September 1998 after Glencar secured a \$42.5 million debt-financing package from a consortium of banks and institutions.

Wassa Main was originally developed as a 3 Mtpa open pit heap leach operation with a forecasted life of mine (“LoM”) gold production of approximately 100,000 ounces per annum. The first material from the pit was mined in October 1998. After approximately one year of production, it became evident that the predicted heap leach gold recovery of 85% could not be achieved, mainly due to the high clay content of the resource and poor solution management. After a number of attempts to improve the recovery, including increased agglomeration and doubling the leach solution application rate, it was concluded that the achievable gold recovery by heap leach was between 55% and 60%. The combined effect of the lower than planned gold recovery and lull in the gold price at the time resulted in Glencar not being able to service debt to its creditors. In early 2001, the creditors together with Glencar decided to sell the project to recover some of the accumulated debt. Mining ceased at the end of October 2001.

When the senior secured creditors exercised security over the project in 2001, the project was put up for sale. Upon completion of the acquisition of Wassa Mine by the Company in 2002, a further exploration program was undertaken. Both of these exploration programs formed part of a feasibility study that was completed in July 2003, which demonstrated the economic viability of reopening and expanding the existing open pits and processing the material through a conventional CIL circuit. Wassa has been operating as a conventional CIL milling operation since late April 2005.

Geological Setting

Wassa lies in the Birimian Province of the West African Precambrian Shield, within the southern portion of the Ashanti Greenstone Belt along the eastern margin of the belt within a volcano-sedimentary assemblage located at proximity to the Tarkwaian basin contact. The eastern contact between the Tarkwaian basin and the volcano-sedimentary rocks of the Sefwi group is faulted, but the fault is discrete as opposed to the western contact of the Ashanti belt where the Ashanti fault zone can be several hundred m wide.

The lithologies of the Wassa assemblage are predominantly comprised of mafic to intermediate volcanic flows which are interbedded with minor horizons of volcanoclastics, clastic sediments such as wackes and magnetite rich sedimentary layers, most likely banded iron formations intercalated with mudstones. The magnetic signature of the Ashanti belt is relatively high in comparison to the surrounding Birimian sedimentary basins such as the Kumasi basin to the west of the Ashanti belt and the Akyem Basin to the East.

Rock assemblages from the southern area of the Ashanti belt were formed between a period spanning from 2,080 to 2,240 million years, with the Sefwi Group being the oldest rock package and the Tarkwa sediments being the youngest. The Ashanti belt is host to numerous gold occurrences, which are believed to be related to various stages of the Eoeburnean and Eburnean deformational event. Structural evidences and relationships observed in drill core and the pits at Wassa would suggest the mineralization to be of Eoeburnean timing while other known deposits in the southern portion of the Ashanti belt, such as Bogoso/Prestea is considered to be of Eburnean age.

Exploration

In addition to the drilling (as described below), extensive exploration work has been conducted on and around the Wassa Mine. Previously, several airborne and ground geophysical surveys consisting of aero-magnetics and radiometrics were conducted. The geophysical surveys targeted geochemical anomalies which had previously been identified following multiple stream and soil geochemical sampling programs, which are described below for each concession.

Modern exploration programs at Wassa began in the early 1990s with satellite imagery and geophysical surveys which identified geophysical lineaments and anomalies over small scale and colonial mining areas. Stream and soil geochemistry sampling programs were conducted over the geophysical anomalies and identified two linear gold in-soil anomalies.

Exploration drilling commenced in February 1994, and by March 1997, a total of 58,709 m of RC and DD had been completed. In September 1997, consulting engineers Pincock, Allen and Holt completed a feasibility study. Only minimal exploration work was conducted by SGL between the completion of the feasibility study in 1997 and the 2001 bankruptcy.

In March 2002, Golden Star started an exploration program consisting mainly of pit mapping and drilling below the pits to test the continuity of mineralization at depth and with the aim to increase the quoted reserves and resources for the feasibility study.

Simultaneous with the resource drilling program, which targeted resource increases in the pit areas, Golden Star also undertook grass roots exploration along two previously identified mineralized trends. The target area was located south of the main pits and the South-Akyempim anomaly was a soil target which had never been previously drilled and was located west of the main pits. Deep auger campaigns were also undertaken in the Subri forest reserve which is located in the southern portion of the Wassa Mining Lease.

In March and April 2004, a high-resolution helicopter geophysical survey was carried out over the area comprising Wassa and surrounding prospecting and reconnaissance licences. Five different survey types were conducted, namely: Electromagnetic, Resistivity, Magnetic, Radiometric and Magnetic Horizontal Gradient. The surveys consisted of 9,085 km of flown lines covering a total area of 450 square km. The geophysical surveys identified several anomalies with targets being prioritized on the basis of supporting geochemical and geological evidence.

The exploration program in 2005 continued to focus on drill testing anomalies identified by the airborne geophysical survey as well as infill drilling within the pit area. Drilling was carried out by a combination of DD, RC and reverse air blast (“**RAB**”) techniques. The following years were subject to more infill and resource definition drilling in the pit areas at Wassa until the 2011 exploration program was undertaken, at which point a shift toward drilling deep high-grade targets below the pits became the main focus of the exploration programs.

Since the discovery of higher-grade gold mineralization beneath the current Wassa pits in 2011, the exploration focus has shifted to delineating the controls and geometry of these zones. Drilling from 2011 to 2014 was focused on delineating the extents of the gold mineralization beneath the pits and extending the projected plunge of the mineralization to the south. In 2015, exploration conducted at Wassa was limited to infill drilling of the first planned stopes along the F Shoot and B Shoot trends. The 2015 drilling along the F Shoot trend was successful in growing the target area of the F Shoot trend significantly.

On February 4, 2016, the Company announced the results of its F Shoot drilling at Wassa Underground. The F Shoot is characterized by up to three parallel zones. The results from this phase of drilling showed that grades and thicknesses amenable to underground mining and extended the F Shoot target north of the reserve. Additional drilling was planned from both surface and underground

to better delineate the higher-grade portions of the structure. On July 10, 2016, the first stope in the upper part of the F Shoot was mined using longitudinal long hole open stoping. Commercial production was achieved at Wassa Underground, effective January 1, 2017, and the project construction of Wassa Underground, including the installation of all ancillary infrastructure, was complete and operational, in accordance with the Company's planned schedule and budget.

Exploration activities for 2017 increased over the previous two years when the Company was focussing on building the Wassa underground operation. Drilling focused on extending B Shoot mineralization up plunge to the north of the current planned stoping areas and down plunge to the south of the current inferred mineral resources. Limited drilling was also conducted along the 242 Footwall ("FW") target where three holes were completed.

Drilling to the North of the planned B Shoot stopes involved 15 holes, totaling 4,164 m. The results have confirmed that the high-grade B Shoot mineralization extends approximately 50 m to the north, suggesting the potential to add production to Wassa Underground's mine plan in the near term. In the second half of 2017, two DD holes (612 m) were drilled from within the existing workings of Wassa Underground to confirm the high-grade results drilled from surface earlier in 2017. These holes tested the B Shoot zone approximately 50 m to the north of the last planned stopes on 695 Level, following up on the significant intercept reported in surface hole BS17DD003 of 23.8m grading 7.3 g/t Au from 289.9 m, which was announced on September 19, 2017. The first of the new holes (BS17-720-29), which was drilled across the top of the interpreted zone, confirmed the grades and thicknesses intersected in the earlier hole, including 27.1m grading 8.7 g/t Au from 209.9 m. The second new hole, BS17-745-17, drilled approximately 20 m up dip of the first new hole, also reported a significant intercept: 11.4m grading 7.3 g/t Au from 219.0 m. This confirmed the continuity of the gold mineralization 50 m to the north of the planned stoping area.

The 2017 B Shoot South step out drilling program comprised 6,818 m in total and included one 'mother' hole with four directional 'daughter' holes, wedged and drilled at an angle from the mother hole. The mother hole, BS17DD385M, was collared 180 m to the south of Wassa Underground's current inferred mineral resources. Its objective was to test the down plunge projection of the 70.5 m zone of mineralization grading 5.9 g/t Au from a depth of 742.4 m, which was intersected in hole BSDD315M drilled during the previous deep drilling campaign in 2014. This first mother hole intersected several wide zones of high-grade mineralization, including a drilled width of 23.8 m grading 6.1 g/t Au from 1,001.0 m and 21.7 m grading 5.3 g/t from 1,049.3 m. The results from the four daughter holes provide further confirmation of the extension of the ore body, although the zones are believed to be related to the F Shoot trend, rather than the B Shoot, due to the nature of the folding. The daughter holes were wedged and drilled at angles both above and below the mother hole, testing the zone over approximately 400 m of dip extension. The thickest zone of gold mineralization drilled to date at Wassa was reported from the third daughter hole: 94.0 m averaging 4.4 g/t Au from 1,305.7 m. These results confirm the B Shoot and F Shoot's extensions to the south and further drilling is expected in 2019. In addition to these directional holes, four holes tested the F Shoot inferred mineral resource up plunge, north towards the existing mineral reserve (on sections 19100, 19300 and 19500), including two new holes and two existing holes, which were re-entered and deepened.

Golden Star also intersected a new horizon of mineralization in the footwall of the 242 trend, which has been named 242 FW. The 242 zone is located in the flatter dipping western limb of the Wassa deposit scale fold. The 242 FW underground target was discovered in 2017 and it is the first time that Golden Star has investigated the potential of the foot wall horizon. Three holes were drilled into the footwall approximately 300 m below the area that the Company had mined previously. The northernmost hole, 24217DD006, returned an intercept of 6.8m grading 8.2 g/t Au from 488.0 m.

Exploration focused on further drilling of the southern extensions of the Wassa ore body. In 2018, 24 surface drill holes were completed totaling 26,757 m. Drilling was designed to expand on the known inferred mineral resource with another 200 m step out drill fence on 18700 N being initiated. Assay results from holes drilled on 18700N have confirmed Wassa high-grade mineralization continues to the south. Drill hole BS18DD391D1 intersected two parallel zones: the upper zone has an estimated true width of 64.3 m at a grade of 7.4 g/t Au from 577.0 m and the lower zone has an estimated true width of 49.7 m grading 5.5 g/t from 792.0 m. These depths are from the collar position of the wedge in the mother hole, which correspond to the vertical depths indicated above. Hole BS18DD391M, which is approximately 100 m up dip of this daughter hole, intersected both zones but only one reported significant grades: 17.5 m grading 10.0 g/t Au from 1,369.70 m. Two additional holes, BS18DD391D2 and BS18DD392D1, are both daughter holes drilled on the 18700 N drill fence. These daughter holes were then drilled at various angles from the mother hole and their objective was to test above and below the high-grade mineralization intersected in hole BSDD391D1 (64.3 m grading 7.4 g/t Au from 577.0 m and 49.7 m grading 5.5 g/t from 792.0 m). The results received to date confirm the extension of the deposit down plunge to the south.

This new drilling was used to update the mineral resources for Wassa's 2018 year-end statements.

During 2019, Wassa continued to focus on increasing the size of and confidence in the inferred mineral resource and the conversion of inferred mineral resources to indicated mineral resources through infill and step out diamond core drilling. A total of 59 holes have been completed for 45,047 metres.

The drilling has been successful in converting portions of the inferred mineral resource to indicated mineral resources as well as better defining the inferred mineral resource at-depth and along the hanging wall and footwall lodes peripheral to the main B-Shoot mineralization. Infill drilling into the previously interpreted wide zones of gold mineralization at-depth has shown that, instead of a single wide high-grade mineralized zone, there are four subparallel zones which have slightly less volume compared to the previous interpretation but a higher grade, which we anticipate will result in roughly the same metal content. This new understanding has been incorporated into the 2019 year-end geological interpretation and is the basis for the year-end mineral resource estimation.

Mineralization

The Wassa mineralization is subdivided into a number of domains, namely; F Shoot, B Shoot, 242, South East, Starter, 419, Mid East and Dead Man's Hill. Each of these represents discontinuous segments of the main mineralized system. The South Akyempim ("SAK") deposits are located approximately 2 km to the southwest of the Wassa Main deposit on the northern end of a well-defined mineralized trend parallel to the Wassa Main trend. The mineralization is hosted in highly altered multi-phased greenstone-hosted quartz-carbonate veins interlaced with sedimentary pelitic units.

Mineralization within Wassa Main is structurally controlled and related to vein densities and sulphide contents. The mineralization generally consists of broadly tabular zones containing dismembered and folded ribbon-like bodies of narrow quartz vein material. Three vein generations have been distinguished on the basis of structural evidence, vein mineralogy, textures and associated gold grades.

Drilling

Drilling is carried out by a combination of DD, RC and RAB techniques. In general, the RAB method is used at early stages for follow-up to soil geochemical sampling and during production for testing contacts and mineralization extensions around the

production areas and has a maximum drilling depth of around 30 m. The RC pre-collar diamond core tail drilling is used as the main method for obtaining suitable samples for mineral resource estimation and is carried out along drill lines spaced between 25 and 50 m apart along prospective structures and anomalies defined from soil geochemistry and RAB drilling results. RC drilling is typically extended to depths in the order of 100 to 125 m. The DD method is used to provide more detailed geological data in those areas where more structural and geotechnical information is required. Generally, the deeper intersections are also drilled using DD and, as a result, most section lines contain a combination of RC and DD drilling.

RC and DD drilling were carried out in double shifts and during every shift a Golden Star geologist was on site to align the drill rig and check the drill head dip and azimuth. Downhole surveying was conducted using a Single Shot Camera (“SSC”), for RC and DD holes at the bottom of holes exceeding 30 m depths and then taken progressively every 30 m up hole. The SSC recorded the dip and azimuth for each of the surveys on a film image, this image was validated and recorded by the Company geologists or was recorded by a Reflex survey instrument and captured in the database as well as being filed in the respective drill hole file folders on site.

Drilling depths at Wassa Main have generally been less than 250 m, but with the discovery of higher grades below Wassa Main in late 2011, hole depths have increased. In the first-half of 2014, two gyro survey instruments were utilized to resurvey several of the deeper holes. In total 153 holes, drilled during 2012 to 2014, were resurveyed. The gyro survey readings were conducted every 10 m both in and out of the hole and the values were then averaged. The 153 gyro surveyed holes were updated in the database and subsequently used for the resource estimates. The gyro surveys showed that there was some deviation in the holes below 250 m drilled depth. Deviations varied from location to location depending on drill orientation with a general tendency for the hole to steepen and swing to the north.

The drilling in 2015 was designed to infill the existing drill spacing within the first planned underground mining stopes along the F and B Shoot trends. The F Shoot area was sparsely drilled on 25 m drill fence spacing which was closed with the 2015 drilling to a nominal 12.5 m fence spacing. Although the section spacing along the F Shoot trend was tightened up to 12.5 m spacing, the holes along the drill fence often exceeded 12.5 m and these gaps will be closed using DD from the underground development, once established. The Wassa Underground development commenced in the middle of 2015. Pre-commercial production commenced in early July 2016. The successful blasting of the first stope delivered the first ore from the new underground mine to the Wassa processing plant, where it was blended with ore from Wassa Main. Underground ore was mined using longitudinal long hole stoping. Commercial production was achieved at Wassa Underground effective January 1, 2017.

Drilling in 2016 concentrated on definition drilling of underground stoping areas from both underground and surface. Advanced access to Wassa Underground enabled access for drilling, which was conducted using three rigs for most of the year. In addition to underground drilling, several surface rigs completed infill drilling of the first planned transverse stopes.

Exploration at Wassa Underground in 2017 focussed on two key areas. First, the extension of B Shoot North was tested, which has the potential to increase near term production from the mine. The results to date have confirmed that the high-grade B Shoot mineralization extends approximately 50 m to the north, suggesting the potential to add production to Wassa Underground’s mine plan in the near term.

Second, step out fences were drilled with the objective of ascertaining if the B Shoot is continuous to the South, down plunge of the current inferred mineral resources. The B Shoot South step out drilling program comprises 7,000 m in total and includes two mother holes with up to four directional daughter holes being deflected from each of these.

The 2018 surface drilling programs continued to step out to the south with another fence on 18700 N completed and drilling being initiated on 18500 N, another 200 m step out fence. Further drilling was also conducted to better delineate and close off some open zones of inferred mineral resources. In addition to this inferred mineral resource expansion drilling, the Company has been working to convert inferred mineral resources to indicated mineral resources.

The 2019 drilling programs at Wassa resulted in an additional 59 holes for approximately 45,000 metres. The 2019 drilling at Wassa had three goals, conversion of inferred resources to indicated, definition and expansion of current inferred resources. Results successfully converted portions of the inferred resources to indicated and provided better defining mineralization at depth and within the hanging and footwall of the main B Shoot mineralization. Deeper drilling into the wide zones of mineralization at depth has shown that instead of a single high-grade mineralized zone there are now four sub parallel zones, this new understanding has been incorporated into the year-end resource grade estimation.

Sampling and Analysis

Sample preparation on site is restricted to core logging and splitting. The facilities consist of enclosed core and coarse reject storage facilities, covered logging sheds and areas for the splitting of RC and RAB samples. Sub-sampling of RC and RAB samples is carried out using a Jones Riffle splitter.

Sampling is typically carried out along the entire drilled length. For RC drilling, samples are collected every 1 m. Where DD holes have been pre-collared using RC, the individual 1 m RC samples are combined to produce 3 m composites which are then sent for analysis. Should any 3 m composite sample return a significant gold grade assay, the individual 1 m samples are then sent separately along with those from the immediately adjacent samples.

DD samples are collected, logged and split with a diamond rock saw in maximum 1 m lengths. The core is split into two equal parts along a median to the foliation plane using a core cutter. The sampling concept is to ensure a representative sample of the core is assayed. The remaining half core is retained in the core tray, for reference and additional sampling if required.

RC sampling protocols were established in 2003. The composite length of 3 m has been established to allow a minimum of at least two composites per drill hole intersection based on experience from exploration drilling and mining. The hanging wall and footwall intersections can generally be easily recognized in core from changes in pyrite content and style of quartz mineralization.

RAB samples are collected and bagged at 1 m intervals. As the samples are generally smaller in size than the RC samples, 3 m composites are prepared before using the PVC tube to collect a portion of the three individual 1 m samples. After positive results from the 3 m composites, the individual 1 m samples are split to approximately 2 to 3 kilograms and then submitted to the laboratory for analysis.

Security of Samples

Samples are collated at the mine site after splitting and then transported to the primary laboratory for the completion of the sample preparation and chemical analysis. Exploration samples are trucked by road to the laboratories in Tarkwa.

Sample security involves two aspects, namely maintaining the chain of custody of samples to prevent inadvertent contamination or mixing of samples and rendering active tampering of samples as difficult as possible.

The transport of samples from site to the laboratory is by road using a truck dispatched from the laboratory. As the samples are loaded, they are checked, and sample numbers validated. The sample dispatch forms are signed off by the driver and a company representative. The sample dispatch dates are recorded in the sample database as well as the date when results are received.

No specific security safeguards have been put in place by the Company to maintain the chain of custody during the transfer of core between drilling sites, the core library, and sample preparation and assaying facilities. Core and rejects from the sample preparation are archived in secure facilities at the core yard and remain available for future testing.

Metallurgical Test Work

It is anticipated that up to one-third of the plant feed from the underground mining operation at Wassa will comprise higher grade underground material, which is observed to contain higher levels of sulphide minerals than the historical open pit feed. To evaluate the performance of material from underground mining, the Company took a series of samples from the available half core remaining from ore resource drilling and compared the physical characteristics and metallurgical response from these to a reference sample of the open pit plant feed.

A subsequent metallurgical test-work program aimed to determine physical and metallurgical differences between the underground feed to be processed over the first five years of the underground operation (based on the current indicated resource) and the current and, to some extent, historic feeds. As the plant was already treating what was reported and observed to be a reasonably similar feed material, test-work was undertaken on a series of six variability samples and four crushability samples, which were compared to a reference sample taken from the current open pit ore feed to the process plant.

The metallurgical test-work was undertaken by SGS in Cornwall, UK and the samples were delivered and logged in December 2014 with the initial phase of test-work completed and a draft report was issued in early April 2015.

By the end of 2019, a total of 3,332,628 tonnes of Wassa Underground ore had been processed through the plant with an average metallurgical recovery of 95.3%. No detrimental metallurgical or mechanical properties have been observed in the underground ore..

Mineral Reserve and Mineral Resources Estimates

See “Consolidated Mineral Reserve and Mineral Resource Estimations” section below.

Mining Operations

On January 1, 2017, Wassa Underground achieved commercial production. Wassa transformed into an underground-only operation in late January 2018. Wassa Underground has a mine life of seven years. In 2018 and 2019, Wassa Underground production was 137,261 and 149,697 ounces of gold respectively.

Open pit operations are planned to commence during the final years of the underground operations to minimise interactions between the two operations. The mining method planned for the Wassa open pit is a conventional excavator and truck method typical for this type and style of gold mineralization and aligned to previous open pit operations on site. Drilling and blasting of ore and waste will be used as required for the variably weathered material on 6m benches with 3m dig fitch heights.

The development of the underground mine was carried out in conjunction with the existing open pit mining operation. A twin decline system was driven from within the north east wall of the current open pit down to the high-grade zone beneath the bottom

of the final pit. A long hole open stopping method is used to mine the ore body dipping at about 65 degree to the west. In the upper areas, a longitudinal mining layout is envisioned using waste rock fill while deeper down in the main part of the ore body, a transverse primary-secondary system using cemented rockfill will be utilized.

Gold recovery is achieved at Wassa through the use of conventional CIL technology. In the LoM plan, the annual feed rate is 1.5 Mtpa of 100% fresh ore from underground, increasing to 2.7 Mtpa with resumption of open pit mining.

There are two tailings facilities that will accommodate the anticipated tailings production: the original tailings storage facility (“TSF1”) and a more recent tailings storage facility (“TSF2”). Cell 1 of TSF2 is in operation, with two further cells incorporated into the engineering design and permitting.

TSF1 is located northwest of the plant site at the head of a southerly draining valley, immediately adjacent to and then over some pre-existing leach pads. The TSF1 facility has been raised in stages with the first stage being constructed in 2004. A supernatant pond currently exists in the north of the TSF1 area as beaches slope away from the main embankment. Deposition occurs around the entire periphery to control the position of the supernatant pond. Paddock deposition was conducted in the facility throughout 2016 and 2017 to establish a surface landform for revegetation. Revegetation commenced on the facility in 2017 in areas that had achieved final landform profiles, with any final deposition subject to closure engineering assessments that are presently underway. To date 64 hectares of TSF1 have been planted with oil palm as part of a revegetation trial and following fruit production in 2019, results confirmed that palm oil met all required standards for commercial (consumption and industrial) use.

The construction and operation of TSF2 was initially permitted by the EPA in 2013. The environmental permit issued included the caveat that the facility be lined with high density polyethylene (“HDPE”) - and, as such, application was made to the EPA for a revised design and construction schedule and was subsequently permitted in November 2015. To make way for the TSF2 construction, the resettlement of the Togbekrom and surrounding hamlets was completed in accordance with the approved resettlement action plan. Construction of Cell 1 of the TSF2 facility commenced in 2016 and deposition commenced in 2017. As a result of modifications to the operating conditions, at the direction of the Minerals Commission, Mines Inspectorate Division, the TSF2 design has been modified such that future raises and cells will be constructed with a compacted soil liner.

An environmental management plan (an “EMP”) for the years covering 2018 to 2020 was submitted to the EPA in December 2017. Following EPA review, in June 2018 GSWL was advised to pay the EMP processing and certification fees and to submit the finalised EMP documents, which occurred in June 2018 and November 2018, respectively.

Capital Costs

The table below provides the estimated remaining life of mine capital cost breakdown of Wassa:

		Total (\$ millions)	
Capital	Sustaining	Underground	60
		Open Pit	3
		Plant	52
		Surface	20
	Development	Underground	54
		Open Pit	86
		Plant	0
Total capital		275	

Operating Costs

The table below provides the estimated life of mine operating cost breakdown of Wassa:

Area	Unit	Operating cost
Mining - open pit	\$/t of total material mined	\$3.15
Mining - underground	\$/t of ore mined	\$37.00
Processing	\$/t of ore processed	\$21.55 (underground only); \$19.20 when open pit restarts
Site Admin.	\$/t of ore processed	\$10.60 (underground only); \$8.20 when open pit restarts

Exploration and Development

The 2019 drilling at Wassa had three goals, conversion of inferred resources to indicated, definition and expansion of current inferred resources. Results successfully converted portions of the inferred resources to indicated and provided better defining mineralization at depth and within the hanging and footwall of the main B Shoot mineralization. Deeper drilling into the wide zones of mineralization at depth has shown that instead of a single high-grade mineralized zone there are now four sub parallel zones, this new understanding has been incorporated into the year-end resource grade estimation.

Additional mineral resources delineated at Wassa Underground would give the Company the ability to increase near-term production. The underground and processing infrastructure has under-utilised capacity, so if new mineral resources are identified in amenable locations, the mining rate could be increased without substantial expenditures for infrastructure upgrades.

Bogoso/Prestea Gold Mine

Project Description and Location

Golden Star, through its subsidiary GSBPL, owns 90% of and operates the Bogoso/Prestea mine and two processing plants located along the Ashanti Trend in western Ghana, approximately 35 km northwest of the town of Tarkwa. Bogoso and Prestea are adjoining mining concessions that together cover approximately 40 km of strike along the southwest-trending Ashanti gold district.

Golden Star acquired Bogoso/Prestea and its non-refractory processing plant in 1999. The Prestea property was acquired in 2001. In July 2007, Golden Star completed construction and development of the Bogoso/Prestea refractory processing plant.

The refractory operation at Bogoso/Prestea was suspended and placed on care and maintenance when the Chujah pit was mined out in the second quarter of 2015. This was in keeping with the Company's strategy of lowering the cash operating cost per ounce by focusing future mining and processing on non-refractory ore types which require lower processing costs than refractory ores.

The non-refractory processing plant currently processes oxide feed from the Prestea South oxide pits and from Prestea Underground.

The Prestea concession is located in the Western Region of Ghana approximately 200 km from the capital Accra and 50 km from the coast of the Gulf of Guinea. Bogoso and Prestea comprise a collection of adjoining mining concessions that together cover a 85 km section of the Ashanti gold trend district in the central eastern section of the Western Region of Ghana, with the processing facilities situated approximately 10 km south of the town of Bogoso.

Prestea Underground was mined from the 1870s until 2002, when mining ceased following an extended period of low gold prices in the late 1990s and early 2000s. The Prestea mining area has produced approximately nine million ounces of gold, the second highest production of any mine in Ghana. The underground workings are extensive, reaching depths of approximately 1,450 m

and extending along a strike length of 9 km. Underground workings can currently be accessed via two surface shafts, one near the town of Prestea (Central Shaft) and a second approximately four km to the southwest at Bondaye.

Prestea Underground is an underground gold mine located 15 km south of the Bogoso/Prestea mine and adjacent to the town of Prestea. The mine consists of two usable access shafts and extensive underground workings and support facilities. Access to the mine site is via an unpaved road from Tarkwa.

The Prestea Underground consists of an underground mine with a production mine life of five years and a modified Bogoso/Prestea non-refractory processing plant. The Prestea Underground mineral resource is developed on a steeply dipping, narrow vein structure between 17 level (“L”) and 24 L, accessible through the Prestea Central Shaft. The ore is mined using a mechanized shrinkage stoping method. Alimak stoping was selected as the mining method for Prestea Underground due to its safety and efficiency benefits over conventional shrinkage mining.

Commercial production at Prestea Underground was achieved on February 1, 2018.

Accessibility, Climate, Local Resources, Infrastructure and Physiography

Local population centers are located at Bogoso town in the northern half of the Bogoso concession, and Prestea town, which is in the center of the Prestea concession. Bogoso is on the main road from Tarkwa to Kumasi and there is a paved road between Bogoso and Prestea. The town of Prestea is located adjacent to the backfilled workings of the Plant North open pit. The central shaft complex and offices for Prestea Underground are within the town limits.

Access to the property by road is a six-hour drive from Accra via the port city of Takoradi. The road is paved from Accra to Prestea. There are airports at Kumasi and Takoradi, which provide daily services to the international airport at Accra. Kumasi is situated approximately a three-and-a-half-hour drive from Prestea Underground. Road surfaces in the area vary from poor to good.

The topography of the area within which the GSBPL assets are located generally slopes in a northern direction towards the Ankobra River. It can be described as gently rolling, punctuated by a number of low hills and rises. A series of northeast-southwest trending sub-parallel ridges, about 2 km wide, dominates the eastern part of the project area. The mineralization tends to occur on the western slopes of the ridges with the intervening valleys occupied by farming communities and seasonal streams.

The GSBPL assets are within the rainforest bioclimatic zone, but there is no primary forest left in the area of the assets as a result of logging, farming, historical mining, and unauthorized small-scale mining activity. The vegetation types on the Prestea concession include secondary forest, secondary thicket, farm re-growth, farmland, and marshes or freshwater swamp forest. Patches of secondary forest are only present in a few areas not accessible for farming. Biodiversity studies have not identified endangered or threatened species on the Prestea concession.

The Prestea Underground project is not expected to add to existing impacts on biodiversity and ecology. No secondary forest has been disturbed for the Prestea Underground and the operational infrastructure is in brownfields areas. The river ecosystems downstream of the operations have been heavily degraded by anthropological influences, including over a century of historic mining operations, discharges of untreated sewage, and unauthorized small-scale mining operations. The climate is south western equatorial climate type with daily temperatures varying mostly between 20°C to 35°C. There are two rainy seasons, one from April to June and then a minor rainy season in October and November. This area has significant rainfall most months, with a short dry season in December and January.

Annual rainfall in the area averaged 1,641 mm between 2002 and 2014. The range in annual rainfall during this period was from minimum annual rainfall 1,197 mm to maximum annual rainfall 2,195 mm.

As Prestea Underground is an underground mine, the climate has no major impact on the operations. In the tropical environment, work on the surface can continue year-round, with short breaks during the mostly short-lived storm events.

Prestea Underground is in an area where mining has occurred more or less continuously since the late 1800s. Therefore, a significant portion of the required services, infrastructure and community support are already in place so local skilled underground workers are available. The following services and infrastructure are relevant to the assessment of the Prestea Underground:

- surface access to Prestea Underground is via the public road network that extends to Prestea Underground;
- electricity and water are available - electricity from the Ghanaian national grid is currently used to power the existing underground dewatering pumps;
- surface infrastructure in the area consists of a variety of government, municipal, and other roads with good overall access;
- processing of the ore is carried out at the existing Bogoso/Prestea non-refractory processing facility, 16 km by road from Prestea;
- tailings storage is in the existing permitted Bogoso/Prestea storage facilities with available approved storage volume that exceeds life of mine tailings production;
- any waste rock generated at the site is disposed in existing approved waste dumps or underground; and
- the extensive history of mining in the local area and also in Ghana provides opportunities to obtain skilled underground workers. Any additional training requirements can be sourced within Ghana.

History

Mampon, Abronye and Opon

The first recorded work in the Mampon area was in 1929 when maps of the Dunkwa area were produced as part of a soil and stream sediment sampling campaign. In the mid-1930s, the Ghanaian Geological Survey mapped the area as part of an extensive investigation of the volcanic-sedimentary boundary between Prestea and Obuasi. Gold exploration is also recorded from this time, although no production records exist.

Very little information is available for the area between 1940 and the early 1980s. In 1988, BHP Billiton Limited (“**BHP**”) obtained the prospecting licence for the Dunkwa concession and conducted regional scale geochemical and Very Low Frequency - Electromagnetic (“**VLF-EM**”) surveys which located the deposits at Mampon, Abronye and Adiokrom. Follow up detailed geochemical and VLF-EM surveys were then conducted and six diamond drillholes explored the extent of the Abronye deposit.

BHP gave up its interest in the concession in the late 1980s and it was taken over by Sikaman Gold Resources Ltd., which subsequently sold its rights to Birim Goldfields Inc. (“**BGI**”) in 1994. Birim Goldfields Inc (“**BGI**”) entered into a joint venture with Battle Mountain Gold (Ghana) Ltd. (“**BMG**”) in 1995. BMG gave up its joint venture rights in 1999, at which point some 4,500 m of trenching, 10,100 m of RC drilling and 8,500 m of DD had been carried out across the concession. During this period, the consultants Watts, Griffis and McOuat completed an independent technical review of the projects and produced an indicated and inferred mineral resource estimate totaling 1.6 Mt at 3.2 g/t Au of oxide material and a further 1.4 Mt at 1.4 g/t Au of fresh material at Mampon and Abronye combined. The reporting code and key assumptions and parameters used to report this mineral

resource are not known and a QP has not done sufficient work to classify this historical estimate as a current mineral resource or mineral reserve. Hence, the Company is not treating the historical estimate as a current mineral resource or mineral reserve.

In 1999, Ashanti Goldfields became a joint venture partner and exploration continued for a further three years with 84 RC holes (5,300 m) and 26 DD (5,500 m) being drilled on the Mampon deposit. In 2002, Resource Services Group completed a technical review of an Ashanti pre-feasibility study and produced an inferred mineral resource estimate of 1.5 Mt at 4.75 g/t Au for oxide, transition and fresh horizons combined at Mampon. The reporting code and key assumptions and parameters used to report this mineral resource are not known and a QP has not undertaken sufficient work to classify this historical estimate as a current mineral resource or mineral reserve and the Company is not treating the historical estimate as current mineral resources or mineral reserves. In 2003, the properties were acquired from BGI by Golden Star.

Bogoso North and Marlu

Marlu Gold Mining Areas Limited (“MGMAL”) explored for gold and operated a medium scale open pit and underground mining operation from 1935 to 1955. Surface gold mineralization was systematically explored utilizing trenching and shallow adits driven across strike. Deeper exploration, well below the depth of oxidation, was conducted on the Marlu deposits, where underground workings extended approximately 250 m below the surface. In 1935, MGMAL commenced mining oxide ore from a series of open pits extending from Bogoso North to Buesichem. During the period 1935 to 1955, MGMAL processed between 0.36 and 0.45 Mtpa of ore yielding 35,000 to 51,000 ounces per year. During the 15-year period of mining (the mine was shut down for the duration of World War II), 6.9 Mt of ore with a recoverable grade of 4.1 g/t Au was processed through the plant generating about 0.9 Moz of gold. Marlu also mined a small amount of ore from underground at Bogoso North. The Marlu mining operation terminated in 1955.

The 30-year period between the closure of the Marlu mining operations in 1955, and the acquisition of the Bogoso concession by Denison Mines Limited, a Canadian company, in early 1986 only saw sporadic exploration activities. These activities included the sampling of old adits and two separate drilling programs, one by the State Gold Mining Company (“SGMC”) and the other by the United Nations Development Program.

In 1986, Canadian Bogoso Resources Limited, a Ghanaian company, commenced exploration on the Bogoso concession. Exploration between 1986 and 1988 outlined potential for development of mining operations on the concession. Included as part of this work was drilling of the Marlu tailings, dewatering and sampling of the Marlu underground workings to a depth of about 100 m, DD beneath the old open pits, adit sampling and trenching.

Golden Star acquired the Bogoso concession in 1999, and since that time has operated a nominal 1.5 Mtpa CIL processing plant to process oxide and other non-refractory ores (termed the Bogoso non-refractory plant). In 2001, Golden Star acquired the Prestea property located adjacent to the Bogoso property and mined surface deposits at Prestea from late 2001 to late 2006. In July 2007, GSBPL completed construction and development of a nominal 3.5 Mtpa processing facility at Bogoso/Prestea that uses BIOX[®] technology to treat refractory sulphide ore.

Chujah, Dumasi, Ablifa and Buesichem

Gold was first commercially mined at the Bogoso/Prestea property in the early 20th century. Notably, in 1935, MGMAL started commercial scale mining of high-grade oxide material from a series of open pits extending south from Bogoso North to Buesichem, just south of the Bogoso/Prestea property. MGMAL also mined a small amount of material from underground at Bogoso North,

Marlu and Bogoso South and was still mining the Buesichem pit when it shut down its operations in 1955. According to BGL's records, during its 2-year period of operating from 1935 to 1955, MGMAL produced over 900,000 ounces of gold at an average recovered grade of 3.73 g/t Au.

Billiton Plc ("**Billiton**"), now known as BHP, then part of the Royal Dutch Shell Group, took control of the Bogoso/Prestea property in the late 1980s and its initial feasibility study established a "mineable reserve" of 5.96 Mt with a mean grade of 4.0 g/t Au, of which 461,000 t (or less than 8%) comprised oxidised material and the remainder fresh (sulphide) material. The reporting code and key assumptions and parameters used to report this mineral resource are not known and a QP has not done sufficient work to classify this historical estimate as a current mineral resource or mineral reserve. Hence, the Company is not treating the historical estimate as current mineral resources or mineral reserves. The construction of a mining and processing facility was completed in 1991, the latter comprising a conventional CIL circuit to treat the oxidised material at a rate of 1.36 Mtpa and a flotation, fluidized bed roasting, and CIL circuit with a design capacity of 0.9 Mtpa. However, Billiton encountered operation difficulties with the fluidized bed roaster, as a result of which the operation was then focussed solely on the oxide ore. The resulting standalone CIL plant had a capacity of approximately 2 Mtpa and on-going exploration was successful in delineating further ore thereby prolonging the mine life.

Mining and exploration at Prestea have been ongoing since 1873. During the majority of this period, the work was concentrated around the Prestea Village area with the development of the underground operation and a small open pit at Plant North in the north of the Prestea concession.

Beta Boundary, Bondaye and Tuapim

Before 2001, little, if any work was carried out in the Bondaye and Tuapim areas. Exploration sampling was carried out over the Beta Boundary deposit immediately to the north. In June 2001, Golden Star was awarded the surface rights for the Prestea concession and commenced a program of detailed stream and outcrop geochemical sampling over the entire concession. The results from this work led to the recognition of potential exploration targets in the Bondaye and Tuapim areas and RAB drilling commenced in 2003. There are no historical (Pre-2004) mineral resource estimates for the Bondaye and Tuapim deposits.

Prestea Underground

Mining in the Prestea area dates back several centuries. The first direct involvement by Europeans in the area occurred in the 1880s with the establishment of the Gio Apanto Gold Mining Company and the Essaman Gold Mining Company.

These companies became the Apanto Mines and Prestea Mines Limited in 1900. The companies merged to become Ariston Gold Mines ("**Ariston**") in 1927. Companies associated with Ariston carried out exploration and some mining to the north east of Prestea at Quaw Badoo and Brumasi. Ariston also prospected concessions immediately to the south west of Prestea at Anfargah.

Recorded production for the Prestea mine began in 1912 under the British company Ariston Mining, which operated the mine until the 1950s. The Company was responsible for the majority of the underground development including shaft sinking, ventilation and level development. The mine was nationalized in the late 1950s, following the independence of Ghana, when all mining operations in the Prestea region were consolidated under the management of Prestea Gold Limited, a subsidiary of SGMC.

In the early 1990s, the mining industry reopened to foreign companies and a joint venture agreement was formed between JCI Limited ("**JCI**"), Prestea Gold Ltd., SGMC and the government of Ghana. In 1994, JCI took over the Prestea Underground operation and carried out exploration and feasibility studies in the area immediately north and south of the mine infrastructure.

JCI withdrew from the joint venture in 1998 due to low gold price and aging infrastructure. A consortium supported by the Ghana Mine Workers Union was then founded to operate the mine under the name “PGR”. The mine operated for three years until its closure in early 2002 due to depressed gold prices and financial difficulties. Golden Star acquired an initial interest in the mine in 2002 (followed by the subsequent acquisition of an additional interest in the mine) which has remained on care and maintenance since that time to 2014 when the refurbishment and current development started.

Geological Setting

The Bogoso-Prestea properties lie within the southern portion of the Ashanti Greenstone Belt along the western margin of the belt. Rock assemblages from the southern area of the Ashanti belt were formed between a period spanning from 2,080 to 2,240 Ma with the Sefwi Group being the oldest rock package and the Tarkwa sediments being the youngest. The Ashanti belt is host to numerous gold occurrences, which are believed to be related to various stages of the Eoeburnean and Eburnean deformational events.

The geology of the Bogoso-Prestea mine site is divided into three main litho-structural assemblages, which are fault bounded and steeply dipping to the west, which suggests that the contacts are structurally controlled and that the litho structural assemblages are unconformable. These packages are from the eastern footwall to the western hanging wall, the Tarkwaian litho-structural assemblage, the tectonic breccia assemblage composed of sheared graphitic sediments and volcanic flows which is commonly referred to as the Main Crush Zone (“**MCZ**”), and the last assemblage is composed of sedimentary units of the Kumasi basin which is located to the west of the Ashanti fault zone.

The Asikuma and Mansiso licences host the Opon, Mampon and Aboronye deposits; structural setting controlling the style of mineralization is similar for all three deposits. Both concessions are underlain by north-northeast trending metasedimentary rocks of the Kumasi basin, including coarse-grained wackes, mudstones and argillites, interpreted to represent turbiditic sedimentary sequences. Mineralization at Mampon and Aboronye is associated with pyrite and arsenopyrite dissemination within the wallrock surrounding the quartz veins and within the quartz veins themselves. Veins range from narrow stringers to robust quartz bodies up to 4 m in width. The veining is also suggested to be associated with north-northwest striking splays or oblique shears close to their intersection with a major north south trending shear zone. Mampon is modeled over a 1 km strike length while the Aboronye deposit is modeled over 700 m along strike.

Gold mineralization between Marlu and Bogoso North is restricted to a narrow graphitic fault zone characterised by low gold tenors. The Bogoso North deposit consists of two splays of the MCZ; a quartz vein dominated hanging wall splay, and a highly graphitic footwall structure. The two splays of the MCZ at Bogoso North extend for approximately 500 m along strike and range in true width from 5 to 15 m. Gold mineralization at Bogoso North dips moderately to the northwest at 40 to 50°. The mineralization is modelled over a 2 km strike at Bogoso North and an additional 2.7 km to a depth of some 300 m. Bogoso North gold mineralization is associated with either quartz veins or graphitic cataclasites.

The Chujah/Dumasi area comprises both Birimian and Tarkwaian lithologies, separated by a deformation corridor referred to as the central structural corridor or tectonic breccia. The tectonic breccia is characterized by an anastomosing network of faults and imbricated fault slices. The thickness of the main shear zone ranges from a few m to over 50 m in true width. The combined length of Chujah and Dumasi is some 3 km along strike and the deposit has been modelled to a vertical depth of 500 m.

The Ablifa deposits are situated on the Ashanti Trend. Mineralization occurs within a narrow north-east striking corridor, in which mineralization dips predominantly to the northeast at angles ranging between 50° and 70°. The deposit is modelled over a strike length of 4.3 km and to a maximum vertical depth of 250 m.

In the vicinity of the Buesichem deposit the MCZ appears to encroach on the Birimian - Tarkwaian contact. In the Buesichem pit, the eastern high wall is composed of a phyllite unit which, has been interpreted as Tarkwaian. The deposit is modelled over a 1.3 km strike length and to a maximum depth of 500 m.

Locally, mineralization at Beta Boundary, Bondaye and Tuapim is characterised by lode gold mineralization, which typically contains non-refractory, free milling gold associated with arsenopyrite. Oxidation of the upper layers of the deposits is extensive and in places can reach tens of m in depth. Beta Boundary is modelled over a 4 km strike length and to a depth of 450 m, whilst Bondaye is modelled over a 1.3 km strike and Tuapim over 2 km. Bondaye and Tuapim are modelled to a maximum vertical depth of 150 m.

The Prestea concession lies within the southern portion of the Ashanti Greenstone Belt along the western margin of the belt. Rock assemblages from the southern area of the Ashanti Belt were formed between a period spanning from 2,080 to 2,240 Ma, with the Sefwi Group being the oldest rock package and the Tarkwa sediments being the youngest. The Ashanti Belt is host to numerous gold occurrences, which are believed to be related to various stages of the Eoeburnean and Eburnean deformational events.

The geology of the Prestea concession is divided into three main litho-structural assemblages, which are fault bounded and steeply dipping to the west. From the eastern footwall to the western hanging wall, these packages are represented by the Tarkwaian litho-structural assemblage, the tectonic breccia assemblage, composed of sheared graphitic sediments and volcanic flows and the last assemblage is composed of undeformed sedimentary units of the Kumasi Basin, which is located to the west of the Ashanti fault zone.

At Prestea, the principal structure is a mineralized fault-filled quartz vein known as the “Main Reef” which is relatively continuous and has been modelled and worked over a strike length of approximately 6 km and to a depth of approximately 1,450 m below surface (35 L). Several subsidiary structures such as the Prestea Underground and East Reef have developed respectively in the immediate hanging wall and footwall of the Main Reef structure. The Prestea Underground is a second order structure where dilational zones occurs of some 200 m into the hanging wall of the Main Reef structure and, at present, is known to occur over a strike length of 800 m and has currently been defined by underground drilling between 550 m to 1,150 m below topography as far as the 30 L. The major thrust faults such as the Main Reef fault and the Prestea Underground fault, as well as the presence of an associated penetrative foliation, are the main syn-D3 structural features.

Exploration

Bogoso-Prestea

In 2007, Golden Star contracted Geotech Airborne Geophysical Surveys (“**GEOTECH**”) to run a Versatile Time-Domain Electromagnetic (“**VTEM**”) survey which they flew over the entire project area. The total drill production up to the end of 2013 stands at 89,216 m of RAB, 141,115 m of RC and 195,133 m of DD drilling. A number of targets were generated from the VTEM survey and a drilling program was embarked upon in 2009 ending in 2011 resulting in some 22,475 m of RC and 93,425 m of DD drilled over a total of 230 RC and 364 diamond holes over the various deposits.

In 2015, all relevant permits were obtained for the Prestea South deposits which gave Golden Star the rights to commence mining in the area. Ahead of the mining two multipurpose drill rigs were utilized to infill the existing drilling along the Bondaye mineralized trend. The majority of drilling conducted at Bondaye was RC drilling with 142 holes being drilled totaling 12,228 m. In addition to the RC drilling nine diamond drill holes, which totaled 507 m, which were collared to collect metallurgical samples in the fresh and transitional material.

The results from the drilling at Bondaye were used to update a resource model for the area, which, in turn, was used for the 2015 year-end resource and reserve statements as well as life of mine planning.

Mampon-Abronye

Golden Star entered into an agreement with BGI in 2003 to acquire the Asikuma and Mansiso concessions. Golden Star took over ownership of the concession following the agreement and undertook exploration activities which included auger sampling, regolith mapping, RAB, RC and DD.

In 2006, a baseline environmental monitoring study as part of the environmental impact assessment for the Mampon project was conducted. Community consultations for the Mampon project were conducted throughout the various exploration programs. Agreements were reached with the landowners, including an effective moratorium over the project site.

In 2007, Golden Star contracted GEOTECH to run a VTEM survey over both concessions. A total of 17 RC holes, 30 DD holes and 4 geotechnical holes were drilled at Mampon over the years by BGI and Golden Star for a total of 7,454 m of drilling.

In 2013, Golden Star completed 35 holes totaling 3,551 m. This drilling consisted of sterilization drilling of proposed waste dump footprints as well as additional infill metallurgical sampling holes. The results of the drilling were used to update the Mampon feasibility study. In early 2015, Golden Star paid the Minerals Commission for the conversion of the Asikuma PL to a Mining Lease, which was formalised in October 2016 and the company subsequently permitted an operation in January 2017.

Exploration drilling in 2017 was conducted along the Abronye trend where 54 shallow RC holes were completed for 2,612 m. This drilling was used to update the resource block models and a small oxide resource was delineated and mined in late 2017/early 2018.

Prestea Underground

Data validation and selected evaluation drilling from underground have helped to increase the confidence in the morphology and orientation of the mineralization at Prestea. Crosscut samples and Barnex JCI era drilling data (surface drilling) accounts for some 92% of the available data. The remainder is a mixture of RC and DD boreholes drilled by Golden Star and underground channels and diamond boreholes acquired by the Company as part of their purchase of the Prestea mining rights.

Sampling covers a depth extent of 1,400 m from surface. The Golden Star data is largely concentrated in the area underlying the Plant North open pit, Central shaft and the northern extent of the Beta boundary.

The previous mineral resource estimate for the Prestea Underground orebodies was based on a combination of Golden Star underground sampling from some 278 boreholes, 115 rock saw samples and channel sampling from two crosscuts. The bulk of the drilling was conducted from 2003 and throughout 2006. The Company drilled an additional 14 underground boreholes into

the Prestea Underground orebody in 2012 and 2013 for geotechnical and metallurgical testing purposes. This drilling has been carried out using fan drilling from cubbies on the most accessible levels but predominantly from the 12 L, 17 L and 24 L.

In 2015, the 14 underground drill holes drilled in 2012 and 2013 were combined with other holes not included in the 2008 resource updates to update the resource models. The inclusion of the additional drilling enabled previously inferred classified material to be reclassified and included in reserves as indicated for inclusion in reserves. These results were included in the year end resource and reserve statements.

Subsequent exploration of the Prestea Underground target has been planned and managed by Golden Star and was initiated in 2003. The 17 L Prestea Underground drive exposes the vein structure as being a distance of approximately 450 m. Along the Prestea Underground drive the backs have been sampled approximately every 5 m with a 2 x 2-inch channel sample cut using an air driven diamond blade rock saw. The channel samples were cut orthogonal to the main structure. The channel samples and the reef drive have been surveyed and tied into the mine grid at surface. A total of 81 channel samples were collected on the 17 L reef drive averaging 2.4 m width with composite grades ranging from 0.1 to 127 g/t gold.

The results from the 17 L channel sampling show that the mineralization along the reef is hosted in several higher-grade pods. These high-grade pods were drill tested at depth from cubbies on the 17 L and 24 L, drilled from the footwall to the hanging wall obliquely to the moderately west dipping foliation and reef.

Exploration during 2017 focused on 24 Level and included in-fill stope definition drilling to further delineate the West Reef ore body of the Prestea Underground. This drilling focused on assessing flexures in the dip of the ore body ahead of raise development and ultimately stope development. The results from this drilling confirmed the previously modelled high-grade nature and strong continuity of gold mineralization of the ore body. In addition to the infill drilling, several holes tested the inferred resources to the north of the first stope on 24 Level. These holes were successful in converting a portion of the inferred mineral resource to indicated mineral resource for conversion to reserves at the end of the year.

In 2019, the drilling focused on in-filling the existing indicated mineral resources ahead of mining and testing inferred mineral resources between 21 and 24 levels, north of the existing mining area. The results of this expansion drilling confirmed the extension of the mineralization north of the planned stopes.

Mineralization

The deposits are located on the 250 km long northeast southwest trending Ashanti Belt, a Paleoproterozoic granitoid-greenstone assemblage of southwest Ghana. These greenstone belts and dividing sedimentary basins were formed and deformed during the Eoeburnean and Eburnean orogeny. The Prestea-Bogoso area occurs at the southern termination of the Ashanti Belt, where the gold deposits, mined or under exploration, are localised principally along a steep to subvertical major crustal structures referred to as the Ashanti trend. The principal structures are graphitic shear zones and mineralized fault filled quartz veins which occur only at Prestea.

The Bogoso-Prestea section of the Ashanti Trend shows a range of mineralization styles associated with graphitic shear zones, which represent the principal displacement zone of a regional-scale shear zone that defines the mineral belt. These styles include laminated quartz vein deposits containing free gold, highly deformed graphitic shear zones containing disseminations of arsenopyrite as the principal gold bearing phase (e.g. Buesichem, Chujah-Dumasi and Bogoso North) and disseminations of sulphides in mafic/intermediate volcanic rocks generally found in the footwall of the main shear zone.

The Bogoso-Prestea deposits can be classified as a lode gold deposits or orogenic mesothermal gold deposits, which are the most common gold systems found within Archean and Paleoproterozoic terrains. In the West African shield, orogenic gold deposits are typically underlain by geology considered to be of Eburnean age and are generally hosted by volcano-sedimentary sequences. The Ashanti belt is considered prospective for orogenic mesothermal gold deposits and hosts numerous other lode gold deposits such as the Obuasi mine.

At Bogoso-Prestea, gold mineralization exhibits a strong relationship with major shear zones, fault zones and second order structures. Three types of mineralization have been identified at Prestea, which are both characterised as mesothermal gold mineralization:

- arsenopyrite-pyrite rich graphitic shear zones;
- fault-fill quartz veins along fault zones and second order structures, which typically contain non-refractory, free milling gold; and
- disseminated mineralization associated with brecciated zones of iron-rich footwall volcanic lenses, which are characterized by finely disseminated arsenopyrite-pyrite rich and silicified replacement zone.

The graphite rich shear-hosted and volcanic hosted mineralization types are refractory and generally lower grade in comparison to fault-filled quartz vein hosted mineralization types.

The weathering profile at Bogoso-Prestea is deep and typically results in extensive surface oxidation of bedrock, to a depth of up to one hundred m. Generally, the weathering profile typically consists of a lateritic surface, a saprolitic horizon, a transitional zone and a deeper primary sulphide zone.

The Prestea deposit can be classified as a lode gold deposit or an orogenic mesothermal gold deposit, which are the most common gold systems found within Achaean and Paleoproterozoic terrains. In the West African shield, orogenic gold deposits are typically underlain by geology considered to be of Birimian age and are generally hosted by volcano-sedimentary sequences.

The Ashanti Greenstone Belt is considered prospective for orogenic mesothermal gold deposits and hosts numerous lode gold deposits and paleoplacer deposits. Several major gold deposits are found within the Ashanti Greenstone Belt which can be classified into six different deposit types:

1. Sedimentary-hosted shear zones
2. Fault-fill quartz veins
3. Paleoplacer
4. Intrusion-hosted
5. Late thrust fault quartz veins
6. Folded veins system

At Prestea, gold mineralization exhibits a strong relationship with major shear zones, fault zones and second order structures. Two types of mineralization have been identified at Prestea, which are both characterized as mesothermal gold mineralization:

- fault-fill quartz veins along fault zones and second order structures, which typically contain non-refractory, free milling gold; and
- disseminated mineralization associated with brecciated zones of iron-rich footwall volcanic lenses, which are characterized by finely disseminated arsenopyrite rich and silicified replacement zones. This type of mineralization is generally lower grade, refractory and locally termed sulphide material.

The weathering profile at Prestea is deep and typically results in extensive surface oxidation of bedrock, to a depth of up to 100 m. Generally, the weathering profile typically consists of a lateritic surface, a saprolitic horizon, a transitional zone and a deeper primary sulphide zone.

Drilling

Open Pit

Drilling is carried out by a combination of DD, RC and RAB techniques at the GSBPL operations. With over 5,000 holes drilled and over 400,000 m of drilling conducted on the various deposits, the continued production and grade control drilling is providing appropriate reconciliation with the original drilling. The interpretation of the relevant results is directly related to the wireframe modelling used for the purpose of defining the volume of material used for the mineral resource volume.

All drill hole data is verified by GSBPL staff and independently by consultants and there are no recovery or survey factors which are considered to materially impact the accuracy and reliability of the results.

Underground

Drilling for the Prestea Underground deposit was conducted from underground drill stations, predominantly from 17 L and 24 L. The drilling was conducted by Golden Star and no historical data was used in the mineral resource estimates. On 17 L, 10 drill stations were established along the Main Reef footwall access where fan drilling was conducted dominantly horizontally and down dip. The up-dip portion of the Prestea Underground remains to be tested between 12 L and 17 L and remains one of the priority drill targets.

The underground drilling of the Prestea Underground target was conducted in several campaigns from 2004 to 2006 with a total of 128 holes and 28,790 m being completed during this time. All drilling was conducted with underground diamond drill core rigs. All borehole collars were surveyed using the underground survey control brought down from the surface using the mine grid. The boreholes were also surveyed nominally every 25 to 30 m down hole using a Reflex single shot survey instrument.

Core recovery through the mineralized zone was optimized by using chrome core barrels, viscous muds and short drilling runs but in some boreholes some of the graphitic fissures (graphic rich fault gouge) were washed away. Areas of lost core were not sampled and in the database are identified as insufficient samples and were given a zero grade. Core recovery was generally good through the zone.

During the second and third quarters of 2017, the Company conducted an in-fill definition drilling program to further delineate the West Reef ore body. This work focused on assessing flexures in the dip of the ore body ahead of raise development and ultimately stope development. On July 6, 2017, the Company reported the first 14 holes of this program, and seven further results were reported on September 21, 2017. All the results received confirmed the previously modelled high-grade nature, simple geometry and thickness of the ore body and the strong continuity of gold mineralization.

Underground drilling at Prestea was limited to stope infill drilling in 2018.

In 2019, the underground drilling focused on in-filling the existing indicated mineral resources ahead of mining and testing inferred mineral resources between 21 and 24 levels, north of the existing mining area. In total 63 holes were drilled totaling 12,424 m of which resource expansion drilling involved 27 holes for 5,860 m and infill operational drilling drilled 36 holes totaling 6,564 m.

This drilling has been used to update the grade control models used for daily mining operations and forecasting but have yet to be included in an updated year-end resource model. An updated long-range resource model will be provided in Q2 2020.

Sampling and Analysis

Surface

For all drilling programs in Ghana, Golden Star follows a standardised approach to drilling and sampling. Sampling is typically carried out along the entire drilled length. For RC drilling, samples are collected every 1 m. Where DD holes have been pre-collared using RC, the individual 1 m RC samples are combined to produce 3 m composites which are then sent for analysis. Should any 3 m composite sample return a significant gold grade assay, the individual 1 m samples are then sent separately along with those from the immediately adjacent samples.

DD samples are collected, logged and split with a diamond rock saw in maximum 1 m lengths. Detailed logging of the core is done by an appropriate qualified geologist at the core shed, recording colour, lithology, alteration, weathering, structure and mineralization. The sampling concept is to ensure a representative sample of the core is assayed. The remaining half core is retained in the core tray, for reference and additional sampling, if required.

Sample assays are performed at Intertek Labs (“**Interek**”) which is based in Tarkwa. Golden Star previously used SGS in Tarkwa. When using a laboratory, Golden Star regularly submits quality control samples to it for testing purposes. Both laboratories are independent of Golden Star and are accredited for international certification for testing and analysis.

Quality control measures are typically set in place to ensure the reliability and trustworthiness of exploration data, and to ensure that it is of sufficient quality for inclusion in the subsequent mineral resource estimates. Quality control measures include written field procedures and independent verifications of aspects such as drilling, surveying, sampling and assaying, data management and database integrity. Appropriate documentation of quality control measures and analysis of quality control data are an integral component of a comprehensive quality assurance program and an important safeguard of project data.

The field procedures implemented by Golden Star are comprehensive and cover all aspects of the data collection process such as surveying, drilling, core and RC cuttings handling, description, sampling and database creation and management. At GSBPL, each task is conducted by appropriately qualified personnel under the direct supervision of a qualified geologist. The measures implemented by Golden Star are considered to be consistent with industry best practice.

Underground

Sampling from RC drilling is carried out using a standard single cyclone with samples collected at 1 m intervals through the expected mineralized zone. In zones of waste rock the sample interval is occasionally increased to a 3 m composite. However, all samples are assayed and if a 3 m sample returns a significant grade value the original 1 m samples will be assayed individually. All samples are riffled and bagged at the drill site and returned to the Bogoso/Prestea mine for reduction and sample preparation.

Core from surface DD is collected using HQ size core barrels (63.5 mm). The core is logged and sawn in half at the Bogoso/Prestea mine site and 1 m samples are prepared through the prospective mineralized zone. However, geological contacts are taken into account and samples will therefore vary slightly in length. In waste zones, samples are collected at 1 m nominal intervals where alteration, sulphidation or quartz veins are observed. The orebodies dip steeply to the west and depending if the drilling is from the surface or the underground, it is angled to try and intersect the mineralized zone orthogonally. However, from underground

drilling cubbies this is often not possible. Recoveries and solid core recovery values are recorded in the database and 80% of the diamond drill core samples have a recovery greater than 90%.

Samples used for the Prestea Underground mineral resource estimations were of two types, rock sawn channel samples on 17 L and 24 L reef drives.

Channel samples were collected using a double diamond blade Cheetah air driven rock saw. This saw produced a channel sample roughly 50 mm deep by 50 mm wide. Sample collection and dispatch to the laboratory was supervised by a geologist who ensured the samples were taken correctly, labelled and transported to the surface.

Core samples generated from the underground drilling were processed at either the core logging facilities at the Prestea Central shaft or at the main core storage facility near the Bogoso/Prestea processing plant. Core boxes with lids were delivered to the logging facilities at the end of every shift by the drillers. The core logging process involved initial cleaning of the core and checking of the metre blocks and mark ups on the individual boxes. If there were any discrepancies, they were addressed with the driller who was responsible for the core. All core was photographed prior to being logged and sampled. Two teams logged the core at the surface one being responsible for recording geotechnical information and overall core recovery between drilling runs. Following the geotechnical drilling, the core was logged by the geologist who paid particular attention to structure, lithology, alteration and mineralization. All of the core was orientated with a spear orientation device and this was used to take structural measurements while the core was being logged.

Sampling intervals were laid out by the geologist logging the core and were based on geological contacts with samples in mineralized zones generally not exceeding one m. The physical sampling of the core was done with a diamond blade core cutting saw. The core was sawn in half along the line marked by the geologist to ensure a representative sample was taken. The half sawn core samples were deposited into individual plastic bags where the sample number was both written on the bag as well as on a piece of flagging tape which was inserted into the bag. The remaining half core sample was returned to the core boxes and kept for future reference. During the sampling, standards and blanks were inserted in the sample numbering sequence and these were recorded on the lab dispatch sheets. Every 20 samples were submitted to the laboratory and were accompanied by a sample standard and a blank to check the precision of the analysis. Additional checks were done on samples once the results were returned.

Security of Samples

Samples were dispatched to either SGS laboratories or Transworld Laboratories (now Intertek Mineral Lab) in Tarkwa. Samples were organized in the core logging facilities where they were checked and put into numeric order. The transportation to the laboratory in Tarkwa is provided by the lab. Sample turnaround and dispatch were then recorded either in a spreadsheet (earlier samples) or with the database software acQuire.

Sample rejects and pulps were returned to the Bogoso/Prestea core logging facility where they would be stored for up to a year and then disposed of. Approximately 10% of the coarse reject samples, above detection limit that were returned to the site, are renumbered and resubmitted to the laboratory for duplicate analysis and used for quality control evaluations. The processing, handling, analysis and storage of the samples for Prestea Underground are considered to be within or exceed industry standards.

Mineral Processing and Metallurgical Testing

Three metallurgical test-work programs have been conducted on samples of mineralization from the PUG West Reef deposit. A metallurgical test-work program was undertaken in 2008 in support of a study at that time investigating the potential for mining ore from both the West Reef and the Footwall Reef at Prestea.

Metallurgical test work programmes were carried out in 2013 for the feasibility study and again in 2015. The recovery and metallurgical performance of Prestea ore predicted during the study phase is confirmed by the actual performance since the underground project commenced operation in 2018. Typical recoveries are in the order of 92-95% for the underground component of mill feed.

Mineral Reserve and Mineral Resources Estimates

See “Consolidated Mineral Reserve and Mineral Resource Estimations” section below.

Mining Operations

The planned life of mine production is 856 kt at an average grade of 11.0 g/t containing 302,000 ounces of gold from underground operations.

Prestea Underground consists of an underground mine with a production mine life of five years. The ore is processed in the Bogoso/Prestea Plant which has been modified to accept low tonnage and high-grade feed. The capacity at the reduced throughput is nominally 240,000 tonnes per annum or (650 tonnes per day).

There is extensive access infrastructure developed along the 9 km of strike of the various orebodies from Prestea in the north to Tuapim in the south.

The project construction of Prestea Underground was complete in the third quarter of 2017- and commercial production of 240 000 tonnes per annum was declared in February 2018. Since then and throughout 2019, the underground operation did not meet production or cost targets and an independent review was conducted during 2019 by consultants CSA Global. The results of the review have since been incorporated into the operation as Project Okode which incorporates a number of operational improvement initiatives and a revised mine plan with the introduction of longhole open stoping alongside the current Alimak method. The change in mine plan and improved productivity form the basis of the mine plans in the 2020 budget plan and the December 2019 mineral reserve estimate.

A low tonnage, high-grade processing stream has been integrated into the existing Bogoso/Prestea processing plant. The modification enables the low-tonnage stream to treat a nominal 650 tons per day of non-refractory run of mine material.

Processing tails are deposited in the existing permitted Bogoso/Prestea tailings storage facilities. The Bogoso/Prestea storage facilities are conventional valley/paddock tailings storage facilities.

The Company submitted the Environmental Impact Statement for the Prestea Underground to the EPA in March 2017. In January 2018, following a stakeholder engagement in lieu of a public hearing, the EPA invoiced the Company for the environmental permit.

Stoping commenced at Prestea Underground on September 27, 2017, with successful blasting of the initial ore from the first stope in the West Reef ore body. During 2018, Prestea Underground produced 128,048 tonnes at a grade of 10.2 grams per tonne.

Processing and Recovery Operation

Ore from the Prestea Underground West Reef project will be trucked to Golden Star's Bogoso operation, a distance of approximately 15 km, where the ore will be processed through the existing process plant producing 60-80,000 ounces per annum of gold at an overall recovery of 94%.

The processing facility at Bogoso consists of two plants which separately process refractory and non-refractory (oxide) ores. As the Prestea Underground ore is non-refractory ore it will be processed through a modified oxide circuit that utilizes conventional CIL for gold recovery. The circuit includes the following unit processes:

- Run-of-mine (RoM) receiving
- Crushing
- Milling and classification circuit (cyclones)
- Gravity concentration
- Thickening
- Feed storage tanks
- CIL circuit
- Upgrade / refurbishment of high intensity cyanide leach reactor (Acacia)
- Gold room and recovery
- A new CIL tailings disposal line
- Services (compressed air, instrument air, oxygen, gland service water, raw and process water make-up)

Infrastructure, Permitting and Compliance Activities

Infrastructure

Prestea is a long-established mining town. The entire basic infrastructure required for the project is in place. A number of infrastructure replacement and rehabilitation projects were completed during 2016 and 2017.

- Shaft rehabilitation – Central Shaft has been rehabilitated and Bonday Shaft work is underway.
- Winders – work is completed on the Central and Bondaye shaft winders including: gearbox refurbishment; motor replacement; brake replacement; installation of new control systems; replacement of liquid controllers and commissioning of dynamic braking systems.
- Development rehabilitation – work is complete on 17 L and 24 L to rehabilitate ground support and replace rail and services.
- Electrical infrastructure – the entire surface and underground electrical system has been refurbished including replacement of 90% of the system hardware and voltage standardization.
- Compressed air – new compressors have been installed to replace the current units which date from the 1930's. Horizontal piping on 17 L and 24 L will be replaced and vertical pipe in the shaft will be rehabilitated based on a non-destructive testing program.
- Pumping – The mine wide pumping system will be replaced following commercial production.

Tailings

Prestea Underground West Reef tailings is deposited in the existing tailings storage facilities at Bogoso. GSBPL has two tailings storage facilities comprising of four cells.

PU-TSF1 is a single cell, paddock style facility from which tailings was hydraulically re-mined from 2013 until August 2015 for reprocessing. In the period of reprocessing some 3 Mt tailings was removed from this facility. PU-TSF1 has been permitted by the EPA and engagement is underway with the Minerals Commission to enable the recommencement of tailings deposition into this tailings storage facility in the future. The void created by the tailings re-processing itself provides sufficient capacity for the LoM Prestea Underground West Reef tailings storage.

PU-TSF2 is a paddock style facility, consisting of three cells: a combined cell 1/2, 2A, and 3. A total of 12 embankments separate and border the cells. Cell 1/2 and Cell 2A are active and Cell 3 is presently subject to paddock deposition and revegetation trials ahead of closure. The remaining volume in PU-TSF2 is also sufficient to contain the LoM tailings although not all embankments are presently at their permitted extent.

Water Treatment

Impact assessment and technical studies for the Prestea Underground West Reef indicate that the mine will remain a dry mine for much of the mine life, with potential mine dewater volumes considered to be low (conservatively calculated to be less than 300 m³/day). In the event that mine dewatering is required in the future, GSBPL has undertaken an assessment of treatment options to determine feasibility and comparative cost benefit analysis.

GSBPL has made sufficient allowance for the design and construction of a water treatment plant should conditions in the Prestea Underground West Reef mining area require dewatering in future.

Social and Environmental Aspects

The Prestea Underground West Reef involves new underground development and infrastructure, connected to but isolated from previous underground workings, including surface waste disposal, underground raise bore development of ventilation shafts, mine dewatering, water treatment and discharge, and transportation of ore to existing approved processing facilities. It extends roughly 9 km along strike in a north-south direction beneath the town of Prestea, to a current known extent of 1.4 km of depth.

The primary environmental approvals required for the Prestea Underground West Reef are the Environmental Permit from the EPA and the Mine Operating Plan from the Minerals Commission. The Mine Operating Plan has been submitted and approved on an annual basis as required and the Environmental Permit has been invoiced (January 2018)..

Golden Star has an environmental and social management system developed along the lines of an ISO 14001 management system. The management is carried out by environmental, health and safety and community affairs specialists Golden Star has also established a series of Community Mine Consultative Committees for on-going engagement of local communities.

Dedicated studies for the Prestea Underground West Reef demonstrate low potential for acid drainage generation and overall the geochemical impact of mining the West Reef stopes is expected to be low. Mine water leachate is predicted to achieve EPA discharge criteria.

Capital Costs

The table below provides the estimated remaining life of mine capital cost:

Area	Capital cost
Development	\$4 million
Sustaining	\$15 million
Total	\$21 million

Operating Costs

The table below provides the estimated life of mine operating cost breakdown of Prestea Underground:

Area	Unit	Operating cost:
Mining	\$/t of ore mined	\$165
Processing	\$/t of ore processed	\$76
Site Admin.	\$/t of ore processed	\$57

Exploration and Development

The end of 2018 saw the establishment of a new drill chamber on 24 level which allowed exploration to drill the northern down plunge extensions of the project West Reef target. The drilling was completed in 2019 and is being incorporated into the next resource model updates and this will in turn be used to determine if further stopes can be added north of the northernmost alimak stopes between 24 and 21 levels.

Limited development work was undertaken during most of 2019 with most activity focussed on improving the operational performance of the mine. Following the development of the updated mine plan, mine development has been active:

- on 24L to establish ventilation with the footwall drive breakthrough; and
- on 17L to establish infrastructure (ventilation and workshops) and commence decline development for the implementation of the sub-level open stoping mining method.

During 2020, 24L will push the footwall drive to the north to access the northern alimak stopes and 17L will continue development of the decline down to 21L.

CONSOLIDATED MINERAL RESERVE AND MINERAL RESOURCE ESTIMATIONS

Consolidated Mineral Reserves

Mineral Reserves	Dec 31, 2019 Proven Mineral Reserve			Dec 31, 2019 Probable Mineral Reserve			Dec 31, 2019 Proven and Probable Mineral Reserve			Dec 31, 2018 Proven and Probable Mineral Reserve		
	tonnes	grade	ounces	tonnes	grade	ounces	tonnes	grade	ounces	tonnes	grade	ounces
	(000)	g/t Au	(000)	(000)	g/t Au	(000)	(000)	g/t Au	(000)	(000)	g/t Au	(000)
Wassa Open Pit	-	-	-	9,920	1.57	500	9,920	1.57	500	9,920	1.57	500
Wassa Underground	1,723	4.11	228	5,701	3.61	661	7,424	3.72	889	7,481	3.95	949
Stockpiles	1,062	0.62	21	-	-	-	1,062	0.62	21	1,205	0.63	24
Subtotal Wassa	2,785	2.78	249	15,621	2.31	1,160	18,405	2.38	1,410	18,606	2.46	1,473
Mampon	-	-	-	-	-	-	-	-	-	-	-	-
Prestea South	-	-	-	-	-	-	-	-	-	-	-	-
Prestea Underground	-	-	-	856	11.00	302	856	11.00	302	826	11.91	316
Stockpiles	-	-	-	-	-	-	-	-	-	-	-	-
Subtotal Presea	-	-	-	856	11.00	302	856	11.00	302	826	11.91	316
GSR Total	2,785	2.78	249	16,476	2.76	1,463	19,261	2.76	1,712	19,432	2.86	1,789

Notes:

1. The stated mineral reserves comply with the requirements of NI 43-101 and are classified in accordance with the "CIM Definition Standards – For mineral resources and mineral reserves". Mineral reserve estimates reflect the Company's

reasonable expectation that all necessary permits and approvals will be obtained and maintained. Mining dilution and mining recovery vary by deposit and have been applied in estimating the mineral reserves.

2. Mineral reserves are the economic portion of the measured and indicated mineral resources. Mineral reserve estimates include mining dilution at grades assumed to be zero.
3. The 2019 mineral reserves were prepared under the supervision of Mr. Matthew Varvari, Vice President Technical Services for the Company. Mr. Varvari is a QP as defined by NI 43-101.
4. The mineral reserves at December 31, 2019, were estimated using a gold price assumption of \$1,300 per ounce.
5. The slope angles of all pit designs are based on geotechnical criteria as established by external consultants. The size and shape of the pit designs are guided by consideration of the results from a pit optimization program.
6. Cut-off grades have been estimated based on operating cost projections, mining dilution and recovery, royalty and stream payment requirements and applicable metallurgical recovery.
7. Marginal cut-off grade estimate for the Wassa open pit is 0.7 g/t Au.
8. Break-even cut-off grade estimates for the underground mines are as follows: Wassa Underground 2.4 g/t Au; and the Prestea Underground Gold Mine 7.5 g/t Au.
9. Prestea Underground proven mineral reserve includes underground broken stocks.
10. Numbers may not add due to rounding.
11. Only non-refractory material is included in mineral reserves.

Consolidated Measured and Indicated Mineral Resources

The table below presents Golden Star's consolidated measured and indicated mineral resources for the year ended December 31, 2019.

	31-Dec-19 Measured Mineral Resources			31-Dec-19 Indicated Mineral Resources			31-Dec-19 Measured & Indicated Mineral Resources			31-Dec-18 Measured & Indicated Mineral Resources		
	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)
Wassa Open Pit				29,179	1.29	1,206	29,179	1.29	1,206	28,042	1.39	1,254
Wassa Underground	2,831	4.99	454	13,371	3.66	1,573	16,202	3.89	2,027	12,507	4.28	1,721
Father Brown Adoikrom UG				913	8.67	254	913	8.67	254	981	7.54	238
Wassa Other				2,512	2.32	187	2,512	2.32	187	2,308	2.36	175
Subtotal Wassa	2,831	4.99	454	45,975	2.18	3,221	48,806	2.34	3,675	43,839	2.40	3,388
Bogoso / Prestea (refractory)				19,812	2.76	1,760	19,812	2.76	1,760	17,677	2.85	1,619
Mampon				106	1.61	5	106	1.61	5	83	1.71	5
Prestea South				1,707	2.08	114	1,707	2.08	114	1,521	2.15	105
Prestea Underground				1,136	17.15	626	1,136	17.15	626	1,308	16.82	707
Bogoso / Prestea Other				2,181	1.68	118	2,181	1.68	118	2,387	1.66	128
Subtotal Bogoso / Prestea	0	0.00	0	24,942	3.27	2,624	24,942	3.27	2,624	22,975	3.47	2,564
TOTAL	0	0.00	0	70,917	2.56	5,845	73,749	2.66	6,299	66,814	2.77	5,952
TOTAL (excluding refractory)	0	0.00	0	51,105	2.49	4,084	53,936	2.62	4,539	49,137	2.74	4,333

Consolidated Inferred Mineral Resources

The table below presents Golden Star's consolidated inferred mineral resources for the year ended December 31, 2019.

	December 31, 2019 Inferred Mineral Resources			December 31 2018 Inferred Mineral Resources		
	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)
Wassa Open Pit	616	1.31	26	23	0.74	1
Wassa Underground	58,820	3.75	7,097	50,661	3.65	5,945
Father Brown Adoikrom UG	1,879	6.07	367	2,313	6.38	475
Wassa Other	421	2.11	29	382	2.10	26
Subtotal Wassa	61,737	3.79	7,518	53,379	3.76	6,446
Mampon	17	1.66	1	14	1.68	1
Prestea South	73	1.87	4	68	8.42	4
Prestea Underground	1,585	9.54	486	2,488	1.50	674
Bogoso / Prestea Other	673	1.47	32	468	7.18	23
Subtotal Bogoso / Prestea	2,348	6.93	523	3,038	7.18	701
Bogoso / Prestea (refractory)	826	2.69	71	916	2.61	77
TOTAL (including refractory)	64,910	3.89	8,113	57,333	3.92	7,224
TOTAL NON REFRACTORY	64,085	3.90	8,042	56,417	3.94	7,147

Notes:

1. The mineral resources for "Bogoso/Prestea Others" include Chujah, Dumasi, Bogoso North, Buesichem, Opon and Ablifa.
2. The Wassa Underground mineral resource has been estimated below the \$1,500 per ounce of gold pit shell using an economic gold grade cut-off of 1.89 g/t Au, which the Company believes would be the lower cut-off grade for underground mining and constrained to a 0.4 g/t Au mineralized grade shell.
3. The Father Brown Underground mineral resource has been estimated below the deepest mined topography using an economic gold grade cut-off of 3.1 g/t Au, which the Company believes would be the lower cut-off grade for underground mining.
4. Prestea Underground mineral resource has been estimated below the \$1,500 per ounce pit shell of Prestea South down to 3,800 m elevation using a gold cut-off grade at 6.84 g/t Au.
5. Mineral resources were estimated using optimized pit shells at a gold price of \$1,500 per ounce. Other than gold price, the same optimized pit shell and underground parameters and modifying factors used to determine the mineral reserves were used to determine the mineral resources.
6. Mineral resources are inclusive of mineral reserves.
7. Numbers may not add due to rounding.

RISK FACTORS

The following sets forth certain risks and uncertainties that could have a material adverse effect on the Company's business, financial condition and/or results of operations and the trading price of its common shares, which may decline, and investors may lose all or part of their investment. Additional risks and uncertainties that the Company does not presently know or that it currently deems immaterial also may impair its business operations. Golden Star cannot assure you that we will successfully address these risks. In addition, other currently unknown risks exist that may affect the Company's business.

General Risks

Working capital may not be sufficient to meet future obligations

As at December 31, 2019, the Company had current assets of \$107.3 million and current liabilities of \$123.8 million. Removing the non-cash deferred revenue current liability of \$11.2 million, this resulted in a working capital of \$5.3 million as at December 31, 2019. The Company's ability to maintain the working capital will depend on whether gold prices increase to levels significantly beyond the average realized gold price and/or whether the Company's operating costs are such that its operations generate sufficient cash flows to improve working capital.

In addition to cash operating costs, the Company's obligations also include a 5% royalty to the Government of Ghana, reclamation expenditures, corporate general and administration expenditures, interest and principal payments on long term debt and capital expenditures.

The Company's ability to repay or refinance its future obligations depends on a number of factors, some of which are beyond its control. Factors that influence the Company's ability to meet these obligations include general global economic conditions, credit and capital market conditions, results of operations, mineral reserves and resources and the price of gold. There is no guarantee that the Company will have positive working capital in the future, or that the working capital generated from operations will be sufficient to cover its expansion plans or for future operations.

The Company has pledged substantially all of its assets as security and may not be able to raise additional debt as a result

As part of the Stream Transaction and Credit Facility, the Company has pledged substantially all of its assets as security to Royal Gold, RGLD and Macquarie. If an event of default occurs under either the Stream Transaction or the Credit Facility which is not remedied, the counterparty or counterparties could seek to realize their security over the assets of the Company. In addition, should Golden Star require additional funds to service debt or general and administrative costs, it may be unable to raise additional debt financing without available collateral.

A substantial or prolonged decline in gold prices would have a material adverse effect on the Company

The price of the common shares, the Company's results of operations and financial condition, and its exploration, development and mining activities have previously been, and would in the future be significantly adversely affected by a substantial or prolonged decline in the price of gold. The price of gold is volatile and is affected by numerous factors beyond the Company's control such as the sale or purchase of gold by various central banks and financial institutions, inflation or deflation, fluctuation in the value of the United States dollar and foreign currencies, global and regional demand, and the political and economic conditions of major gold-producing countries throughout the world, including as a result of a pandemic such as COVID-19. Any drop in the price of gold would adversely impact the Company's revenues, profits and cash flows. In particular, a sustained low gold price could:

- cause suspension of the Company's mining operations at Wassa, and Prestea if these operations become uneconomic at the then-prevailing gold price, thus further reducing revenues;
- cause the Company to be unable to fulfill its obligations under agreements with its partners or under its permits and licences which could cause it to lose its interests in, or be forced to sell, some of its properties;
- cause Golden Star to be unable to fulfill its debt repayment obligations; and
- reduce funds available for exploration and/or development activities, with the result that depleted mineral reserves may not be replaced by new exploration activities.

Furthermore, the need to reassess the feasibility of any of the Company's projects because of declining gold prices could cause substantial delays or could interrupt mining, exploration and development activities until a reassessment could be completed. Life-of-mine plans incorporating significantly lower gold prices could result in reduced estimates of mineral reserves and mineral resources and in material write-downs of the Company's investments in mining properties and increased amortization, reclamation and closure charges.

The Company may in the future incur substantial losses that could make financing its operations and business strategy more difficult and that may affect its ability to service its debts as they become due

The net loss attributable to Golden Star shareholders was \$67.4 million in 2019, compared to a net loss of \$18.1 million attributable to Golden Star shareholders in 2018 and a net income of \$38.8 million attributable to Golden Star shareholders in 2017. In certain years, lower ore grades from the Company's mines, lower gold recovery rates and impairment write-offs of mine property and/or exploration property costs may contribute to net losses. In the future, these factors, as well as declining gold prices, could cause the Company to continue to be unprofitable. Future operating losses could adversely affect the Company's ability to raise additional capital if needed and could materially and adversely affect its operating results and financial condition. In addition, operating losses could affect the Company's ability to meet its debt repayment obligations.

The Company's obligations could strain its financial position and impede its business strategy

Golden Star had total consolidated debt and liabilities (excluding deferred revenue) as of December 31, 2019, of \$292.2 million, including \$2.4 million in leases; \$47.0 million (\$51.5 million face value) pursuant to the Company's outstanding \$65.0 million aggregate principal amount of 7.0% convertible senior notes due in 2021 (the "7% Convertible Debentures"); \$57.4 million principal amount under the Credit Facility; \$90.8 million of current trade payables and accrued liabilities; \$68.4 million accrual for environmental rehabilitation liabilities; and \$5.6 million of derivatives liabilities. The Company's indebtedness and other liabilities may increase as a result of general corporate activities. These liabilities could have important consequences, including the following:

- increasing the Company's vulnerability to depressed gold prices, and general adverse economic and industry conditions;
- limiting the Company's ability to obtain additional financing to fund future working capital, capital expenditures, exploration and development projects and other general corporate requirements;
- requiring Golden Star to dedicate a significant portion of its cash flow from operations to make debt service payments, which would reduce its ability to fund working capital, mining operations, capital expenditures, exploration and development projects and other general corporate requirements;
- limiting the Company's flexibility in planning for, or reacting to, changes in its business and industry; and
- placing the Company at a disadvantage when compared to its competitors that have less debt relative to their market capitalization.

The conversion or repayment of the 7% Convertible Debentures may result in additional dilution and/or a decrease in cash available for other purposes

The Company's 7% Convertible Debentures will mature on August 15, 2021. Accordingly, upon a conversion of the 7% Convertible Debentures, holders of common shares may be subject to additional dilution and/or repayment of the 7% Convertible Debentures may reduce the amount of cash available to the Company for other purposes. If the Company does not have sufficient liquidity to repay the 7% Convertible Debentures in cash on maturity and cannot secure additional financing to do so, there is a risk that

Golden Star may default in repaying the 7% Convertible Debentures and/or that settling the obligation in shares will lead to significant dilution of the common shares of existing and prospective shareholders.

The Company may not be able to refinance the Convertible Debentures if required or if it so desires

The Company may need or desire to refinance all or a portion of the 7% Convertible Debentures or any other future indebtedness that it incurs on or before the maturity of the 7% Convertible Debentures. Golden Star cannot make any assurances that it will be able to refinance any of its indebtedness on commercially reasonable terms or at all.

The Company may not have sufficient funds or the ability to raise the funds to pay interest on the 7% Convertible Debentures or purchase the 7% Convertible Debentures upon a fundamental change

The 7% Convertible Debentures bear interest semi-annually at a rate of 7% per year. If a fundamental change occurs, the Company will be required to offer to purchase, for cash, all of the outstanding 7% Convertible Debentures at a purchase price in cash equal to 100% of the principal amount, plus any accrued and unpaid interest. Golden Star may not have sufficient funds to pay the interest or purchase price when due. In addition, the terms of any borrowing agreements which Golden Star may enter into from time to time may require early repayment of borrowings under circumstances similar to those constituting a fundamental change. Such agreements may also make the Company's purchase of 7% Convertible Debentures an event of default under such agreements. If Golden Star fails to pay interest on the 7% Convertible Debentures or purchase the 7% Convertible Debentures when required, it will be in default under the indenture governing the 7% Convertible Debentures. In addition, a fundamental change may also constitute an event of default or require prepayment under, or result in the acceleration of the maturity of, the Company's other indebtedness, including under the Stream Facility or the Credit Facility, outstanding at the time.

Estimates of the Company's mineral reserves and mineral resources could be inaccurate, which could cause actual production and costs to differ from estimates

There are numerous uncertainties inherent in estimating proven and probable mineral reserves and measured, indicated and inferred mineral resources, including many factors beyond the Company's control. The accuracy of estimates of mineral reserves and mineral resources is a function of the quantity and quality of available data and of the assumptions made and judgments used in engineering and geological interpretation, which could prove to be unreliable. These estimates of mineral reserves and mineral resources may not be accurate, and mineral reserves and mineral resources may not be able to be mined or processed profitably or at all.

Fluctuations in gold prices, results of drilling, metallurgical testing, changes in operating costs, production, and the evaluation of mine plans subsequent to the date of any mineral reserve or mineral resource estimate could require a revision of the estimates. The volume and grade of mineral reserves mined and processed, and recovery rates, might not be the same as currently anticipated. Any material reductions in estimates of the Company's mineral reserves and mineral resources, or of its ability to extract these mineral reserves and mineral resources, could have a material adverse effect on its results of operations and financial condition.

The Company's processing ability may be adversely impacted by certain circumstances

A number of factors could affect our ability to process the quantities of metals that we recover and our ability to efficiently handle certain quantities of processed materials, including, but not limited to, the presence of oversized material at the crushing stage; material showing breakage characteristics different to those planned; material with grades outside of planned grade range; the

presence of deleterious materials in ratios different than expected; material drier or wetter than expected, due to natural or environmental effects; and materials having viscosity or density different than expected.

The occurrence of one or more of the circumstances described above could affect our ability to process the number of tonnes planned, recover valuable materials, remove deleterious materials, and produce planned quantities of concentrates. In turn, this may result in lower throughput, lower recoveries, increased downtime or some combination of all of the foregoing. While minor issues of this nature are part of normal operations, there is no assurance that unexpected conditions may not materially and adversely affect our business, results of operations or financial condition.

The Company currently has only two sources of operational cash flows, which could be insufficient by themselves to fund the Company's continuing exploration and development activities.

The Company's only current significant internal sources of funds are operational cash flows from Wassa Underground and Prestea Underground. The anticipated continuing exploration and development of the Company's properties are expected to require expenditures over the next several years. If cash on hand, free cash flows generated by Wassa and Prestea and any other available facilities, are insufficient to cover all of the Company's capital investment needs, it may require additional financing or it may consider rescheduling capital spending. Furthermore, the Company is obligated under the Stream Transaction to sell a certain percentage of gold production at a reduced gold price, which could limit its future cash flows. Golden Star's ability to raise significant new capital will be a function of macroeconomic conditions, future gold price, its operational performance and its then current cash flow and debt position, among other factors. Continued uncertainty in the global economy, including as a result of the economic impact of the COVID-19 pandemic, may affect lending practices and the Company's ability to access capital. In addition, the Company has granted RGLD and Royal Gold a security interest over the assets of Bogoso/Prestea, Prestea Underground, Wassa and Wassa Underground in connection with the Stream Transaction, which could make debt financing on favourable terms more difficult to arrange. Furthermore, there is no certainty that Golden Star will be able to meet its gold delivery obligation under the Stream Transaction or otherwise meet its obligations. As a result, the Company may not be able to obtain adequate financing on acceptable terms or at all, which could cause the Company to delay or indefinitely postpone further exploration and development of its properties. Consequently, Golden Star could lose its interest in, or could be forced to sell, some or all of its properties. If the Company raises additional funds through the sale of equity securities or securities convertible into equity securities, shareholders may have their equity interest in the Company diluted.

The Company is subject to fluctuations in currency exchange rates and policies on foreign currencies, which could materially adversely affect its financial position

The Company's revenues are in United States dollars, and it maintains most of its cash and cash equivalents in United States dollars or United States dollar-denominated securities. Golden Star converts its United States funds to foreign currencies as certain payment obligations become due. Accordingly, the Company is subject to fluctuations in the rates of currency exchange between the United States dollar and these foreign currencies, and these fluctuations could materially affect the Company's financial position and results of operations. A portion of the operating costs at Prestea and Wassa are based on the Ghanaian currency, the Cedi. The Company is required by the Government of Ghana to convert into Cedis 20% of the foreign exchange proceeds that it receives from selling gold, but the Government could require the Company to convert a higher percentage of gold sales proceeds into Cedis in the future. Golden Star obtains construction and other services and materials and supplies from providers in Australia, South Africa and other countries. The costs of goods and services could increase or decrease due to changes in the value of the United

States dollar or the Cedi, the Euro, the Australian dollar, the British Pound, the South African Rand or other currencies. Consequently, operation and development of the Company's properties could be more costly than anticipated.

Any hedging activities might be unsuccessful and incur losses

Golden Star entered into hedging arrangements in 2019 and may do so in the future. The Company's current and future hedging activities might not protect the Company adequately against declines in the price of gold. In addition, although a hedging program could protect the Company from a decline in the price of gold, it might also prevent the Company from benefiting fully from gold price increases. For example, as part of a hedging program, the Company could be obligated to sell gold at a price lower than the then-current market price.

Risks inherent in acquisitions that Golden Star might undertake could adversely affect its current business, financial condition, and growth

The Company plans to continue to pursue the acquisition of producing, development and advanced stage exploration properties and companies. The search for attractive acquisition opportunities and the completion of suitable transactions are time consuming and expensive, divert management attention from the Company's existing business and may be unsuccessful. Success in the Company's acquisition activities depends on its ability to complete acquisitions on acceptable terms and integrate the acquired operations successfully with its operations. Any acquisition would be accompanied by risks. For example, there may be a significant change in commodity prices after the Company has committed to complete a transaction and established the purchase price or exchange ratio, a material mineral deposit may prove to be below expectations or the acquired business or assets may have unknown liabilities which may be significant. Golden Star may lose the services of its key employees or the key employees of any business the Company acquires, or have difficulty integrating operations and personnel. The integration of an acquired business or assets may disrupt the Company's ongoing business and its relationships with employees, suppliers and contractors. Any one or more of these factors or other risks could cause the Company to not realize the anticipated benefits of an acquisition of properties or companies, and could have a material adverse effect on the Company's current business, financial condition, results of operations and on its ability to grow.

The Company is subject to litigation risks

All industries, including the mining industry, are subject to legal claims, with and without merit. As such, Golden Star is involved in various routine legal proceedings incidental to its business. Defense and settlement costs can be substantial, even with respect to claims that have no merit. Due to the inherent uncertainty of the litigation process, the resolution of any particular legal proceeding could have a material effect on the Company's future financial position and results of operations.

The Company is subject to operational risks

The Company is subject to a number of operational hazards that can delay production or result in liability to the Company. The Company's activities are subject to a number of risks and hazards including:

- power shortages from the national grid;
- mechanical and electrical equipment failures;
- parts availability;
- unexpected changes in mineralization grades;
- unexpected changes in mineralization chemistry and gold recoverability;

- environmental hazards;
- discharge of pollutants or hazardous chemicals;
- industrial accidents;
- labour disputes and shortages;
- supply and shipping problems and delays;
- shortage of equipment and contractor availability;
- unusual or unexpected geological or operating conditions;
- blockage of access to the underground operations;
- inadequate ventilation at the underground operations;
- cave-ins of underground workings;
- failure of pit walls or tailings storage facilities;
- fire;
- marine and transit damage and/or loss;
- changes in the regulatory environment, including in the area of climate change;
- delayed or restricted access to mineral deposits and/or properties due to community interventions;
- members of the workforce contracting COVID-19 and being unable to provide services to the Company; and
- natural phenomena such as inclement weather conditions, floods, droughts and earthquakes.

These or other occurrences could result in damage to, or destruction of, mineral properties or production facilities, personal injury or death, environmental damage, delays in mining, delayed production, monetary losses and possible legal liability. Satisfying such liabilities could be very costly and could have a material adverse effect on the Company's financial position and results of operations.

The Company's mining operations are subject to numerous environmental laws, regulations and permitting requirements and bonding requirements that can delay production and adversely affect operating and development costs

Compliance with existing regulations governing the discharge of materials into the environment, or otherwise relating to environmental protection, in the jurisdictions where the Company has projects, may have a material adverse effect on its exploration activities, results of operations and competitive position. New or expanded regulations, if adopted, could affect the exploration, development, or operation of the Company's projects or otherwise have a material adverse effect on its operations.

Portions of Wassa and the Asikuma mining concession ("Asikuma") are located within certain forest reserve areas. The Mampon pit is located within the Opon Mansi Forest Reserve. Although Asikuma and the associated sections of the Opon Mansi Forest Reserve have been approved by the Government of Ghana as eligible for mining permits, permits for projects in forest reserve areas may not be issued in a timely fashion, or at all, and such permits may contain special requirements that may be burdensome or uneconomic to comply with.

Mining and processing gold from the Company's future development projects in Ghana will require mining, environmental, and other permits and approvals from the Government of Ghana. The trend to longer lead times and a higher cost in obtaining environmental permits has reached a point where the Company is no longer able to accurately estimate permitting times for its planning purposes. The increases in permitting requirements could affect the Company's environmental management activities including, but not limited to, tailings disposal facilities and water management projects at its mines.

Due to an increased level of non-governmental organization activity targeting the mining industry in Ghana, the potential for the Government of Ghana to delay the issuance of permits or impose new requirements or conditions upon mining operations in Ghana may increase. Any changes in the Government of Ghana's policies, or their application, may be costly to comply with and may delay mining operations. The exact nature of other environmental control problems, if any, which the Company may encounter in the future, cannot be predicted primarily because of the changing character of environmental requirements that may be enacted within the various jurisdictions where the Company operates.

As a result of the foregoing risks, project expenditures, production quantities and rates, estimates of rehabilitation expenditures and cash operating costs, among other things, could be materially and adversely affected and could differ materially from anticipated expenditures, production quantities and rates, and costs. In addition, estimated production dates could be delayed materially. Any such events could have a materially adverse effect on the Company's business, financial condition, results of operations and cash flows.

The Company's success depends on developing and maintaining relationships with local communities and stakeholders

Our ongoing and future success depends on developing and maintaining productive relationships with the communities surrounding our operations, including local peoples who may have rights or may assert rights to certain of our properties, and other stakeholders in our operating locations. We believe our operations can provide valuable benefits to surrounding communities, in terms of direct employment, training and skills development and other benefits associated with ongoing payment of taxes. In addition, we seek to maintain partnerships and relationships with local communities. Notwithstanding our ongoing efforts, local communities and stakeholders can become dissatisfied with our activities or the level of benefits provided, which may result in legal or administrative proceedings, civil unrest, protests, direct action or campaigns against us. Any such occurrence could materially and adversely affect our business, financial condition or results of operations.

The continuing development and operation of the Company's mining operations involves numerous uncertainties that could affect the feasibility, profitability or timing of such projects

Mine development projects typically require a number of years and significant expenditures during the development phase before production is possible.

Development projects are subject to the completion of successful feasibility studies and environmental and socioeconomic assessments, the issuance of necessary governmental permits and receipt of adequate financing. The economic feasibility of development projects is based on many factors such as:

- estimation of mineral reserves and mineral resources;
- mining rate, dilution and recovery;
- anticipated metallurgical characteristics of the ore and gold recovery rates;
- environmental and community considerations including resettlement, permitting and approvals;
- future gold prices; and
- anticipated capital and operating costs.

Estimates of proven and probable mineral reserves and operating costs developed in feasibility studies are based on reasonable assumptions including geologic and engineering analyses and may not prove to be accurate.

The management of mine development projects and the start-up of new operations are complex. Completion of development and the commencement of production may be subject to delays and cost overruns. Any of the following events, among others, could affect the profitability or economic feasibility of a project:

- unanticipated changes in grade and tonnage of ore to be mined and processed;
- unanticipated adverse geotechnical conditions;
- incorrect data on which engineering assumptions are made;
- costs of constructing and operating a mine in a specific environment;
- delays on delivery of equipment required for the development and startup of the projects;
- unexpected breakdowns of equipment critical to the development process;
- unexpected increases in the cost of equipment and services related to the mine development projects;
- cost of processing and refining;
- availability of economic sources of power and fuel;
- availability of qualified staff and/or contractors;
- adequacy of water supply;
- adequate access to the site including competing land uses (such as agriculture and illegal mining);
- unanticipated transportation costs and shipping incidents and losses;
- significant increases in the cost of diesel fuel, cyanide or other major components of operating costs;
- government regulations and changes to existing regulations (including regulations relating to prices, royalties, duties, taxes, permitting, restrictions on production, quotas on exportation of minerals, protection of the environment and agricultural lands, including bonding requirements);
- fluctuations in gold prices; and
- accidents, labour actions and force majeure events.

Adverse effects on the operations of Wassa Underground and Prestea Underground, or the further development of these underground mines, could also adversely affect the Company's business (including the Company's ability to achieve its production estimates), financial condition, results of operations and cash flow.

The Company needs to continually discover, develop or acquire additional mineral reserves for gold production and a failure to do so would adversely affect its business and financial position in the future

Because mines have limited lives based on proven and probable mineral reserves, Golden Star must continually replace and expand mineral reserves as its mines produce gold. The Company is required to estimate mine life in connection with its estimation of mineral reserves, but its estimates may not be correct. In addition, mine life would be shortened if Golden Star expands production or if it loses mineral reserves due to changes in gold price or operating costs. The Company's ability to maintain or increase its annual production of gold will be dependent in part on its ability to bring new mines into production and to expand or extend the life of existing mines.

Gold exploration is highly speculative, involves substantial expenditures, and is frequently non-productive

Gold exploration involves a high degree of risk. Exploration projects are frequently unsuccessful. Few prospects that are explored are ultimately developed into producing mines. The Company cannot assure you that its gold exploration efforts will be successful.

The success of gold exploration is dependent in part on the following factors:

- the identification of potential gold mineralization based on surface analysis;
- availability of prospective land;
- availability of government-granted exploration and exploitation permits;
- the quality of the Company's management and its geological and technical expertise; and
- the funding available for exploration and development.

Substantial expenditures are required to determine if a project has economically mineable mineralization. It could take several years to establish proven and probable mineral reserves and to develop and construct mining and processing facilities. Because of these uncertainties, the Company cannot assure you that current and future exploration programs will result in the discovery of mineral reserves, the expansion of its existing mineral reserves or the development of mines.

The Company faces competition from other mining companies in connection with the acquisition of properties

Golden Star faces strong competition from other mining companies in connection with the acquisition of producing properties or properties capable of producing gold. Many of these companies have greater financial resources, operational experience and technical capabilities. As a result of this competition, the Company might be unable to maintain or acquire attractive mining properties on terms it considers acceptable or at all. Consequently, the Company's future revenues, operations and financial condition could be materially adversely affected.

Title to the Company's mineral properties could be challenged

Golden Star seeks to confirm the validity of its rights to title to, or contract rights with respect to, each mineral property in which the Company has a material interest. The Company has mining leases with respect to Prestea, Wassa, Wassa Underground, Prestea Underground, Mampon and Opon. Title insurance generally is not available, and the Company's ability to ensure that it has obtained a secure claim to individual mineral properties or mining concessions is limited.

Golden Star generally does not conduct surveys of its properties until such properties have reached the development stage, and therefore, the precise area and location of such properties could be in doubt. Accordingly, the Company's mineral properties could be subject to prior unregistered agreements, transfers or claims, and title could be affected by, among other things, undetected defects. In addition, the Company might be unable to operate its properties as permitted or to enforce its rights with respect to its properties.

The Company may be materially and adversely affected by challenges relating to slope and stability of underground openings

As Wassa Underground gets deeper and our waste and tailings deposits increase in size as we continue with and expand our mining activities, certain geotechnical challenges may arise, including the possibility of failure of Wassa Underground's opening. If we are required to reinforce such openings or take additional actions to prevent such a failure, we could incur additional expenses, and our operations and stated mineral reserves could be negatively affected. We have taken the actions we determined to be proper in order to maintain the stability of Wassa Underground, but additional action may be required in the future. Unexpected failures or additional requirements to prevent such failures may adversely affect our costs and expose us to health and safety and other liabilities in the event of an accident, and in turn materially and adversely affect the results of our operations and financial condition, as well as potentially have the effect of diminishing our stated mineral reserves.

The Company depends on the services of key executives

The Company is dependent on the services of key executives including its President and Chief Executive Officer, Chief Operating Officer and Chief Financial Officer, and a number of other highly skilled and experienced executive personnel. Due to the relatively small size of the Company's management team, the loss of one or more of these persons or the Company's inability to attract and retain additional highly skilled employees could have an adverse effect on the Company's business and future operations. Additionally, COVID-19 imposes a high risk to all the Company's employees, contractors and executives. The Company has established a policy to diligently monitor developments. Because the situation is fluid and rapidly changing, the Company plans to update its staff whenever necessary. The Company has implemented and communicated a policy to all employees, contractors and executives in order mitigate any potential risk.

The Company's use of contractors may expose it to a number of risks and increase its mining costs

Golden Star uses mining contractors in connection with its mining operations. The use of contractors subjects Golden Star to certain risks, some of which are outside its control, including:

- the Company's ability to negotiate agreements with contractors on acceptable terms;
- reduced control over those aspects of operations which are the responsibility of the contractor;
- failure of a contractor to perform under its agreement;
- interruption of operations or increased costs in the event that a contractor ceases to do business due to insolvency or other unforeseen events;
- failure of a contractor to comply with applicable legal and regulatory requirements;
- labour relation issues from a contractor's workforce or a contractor contracting COVID-19; and
- the potential to incur liability to third parties as a result of the actions of the Company's contractors.

The occurrence of one or more of these risks could adversely affect the Company's financial position and results of operations.

The Company's insurance coverage could be insufficient

The Company's business is subject to a number of risks and hazards generally, including:

- adverse environmental conditions;
- industrial accidents;
- labour disputes;
- unusual or unexpected geological conditions;
- ground or slope failures;
- cave-ins;
- fire damage;
- changes in the regulatory environment;
- marine transit and shipping damage and/or losses;
- natural phenomena such as inclement weather conditions, floods and earthquakes; and
- political risks including expropriation and civil war.

Such occurrences could result in:

- damage to mineral properties or production facilities and equipment;
- personal injury or death;

- loss of legitimate title to properties;
- environmental damage to the Company's properties or the properties of others;
- delays in mining, processing and development;
- monetary losses; and
- possible legal liability.

Although Golden Star maintains insurance in amounts that it believes to be reasonable, the Company's insurance might not cover all the potential risks associated with its business. Golden Star might also be unable to maintain insurance to cover these risks at economically feasible premiums or at all. Insurance coverage might not continue to be available or might not be adequate to cover any resulting liability. In particular in connection with any impacts caused by COVID-19, the extent to which the novel coronavirus impacts the Company's business, including its operations and the market for its securities, will depend on future developments, which are highly uncertain and cannot be predicted at this time, and include the duration, severity and scope of the outbreak and the actions taken to contain or treat the coronavirus outbreak. Moreover, insurance against risks such as environmental pollution or other hazards as a result of exploration and production is not generally available to Golden Star or to other companies in the mining industry on acceptable terms. The Company might also become subject to liability for pollution or other hazards which it cannot insure against or which it might elect not to insure against because of premium costs or other reasons. Losses from these events might cause Golden Star to incur significant costs that could have a material adverse effect upon its business, results of operations or financial condition.

The Company is dependent on information technology systems, which are subject to certain risks, including cybersecurity risks and data leakage risks

The Company is dependent upon information technology systems in the conduct of its operations. Any significant breakdown, invasion, virus, cyber attack, security breach, destruction or interruption of these systems by employees, others with authorized access to the Company's systems, or unauthorized persons could negatively impact its operations. To the extent any invasion, cyber attack or security breach results in disruption to the Company's operations, loss or disclosure of, or damage to, its data or confidential information, its reputation, business, results of operations and financial condition could be materially adversely affected. The Company's systems and insurance coverage for protecting against cyber security risks may not be sufficient. Although to date the Company has not experienced any material losses relating to cyber attacks, it may suffer such losses in the future. Golden Star may be required to expend significant additional resources to continue to modify or enhance its protective measures or to investigate and remediate any information security vulnerabilities.

Public health crises, including COVID-19, could adversely affect our business.

Our business, operations and financial condition could be materially adversely affected by the outbreak of epidemics, pandemics or other health crises, such as the outbreak of the novel coronavirus COVID-19 that was first reported in China in December, 2019 and designated as a pandemic by the WHO on March 11, 2020. The international response to the spread of COVID-19 has led to significant restrictions on travel, temporary business closures, quarantines, global stock market volatility and a general reduction in consumer activity. Such public health crises can result in operating, supply chain and project operations or development delays and disruptions, global stock market and financial market volatility, declining trade and market sentiment, reduced movement of people and labour shortages, and travel and shipping disruption and shutdowns, including as a result of government regulation and prevention measures, or a fear of any of the foregoing, all of which could affect commodity prices, interest rates, credit risk and inflation.

We may experience business interruptions, including suspended or reduced operations at our mines, expenses and delays, relating to COVID-19 and other such events outside of our control, which could have a material adverse impact on our business, operating results, financial condition and the market for our securities. As at the date of this Annual Information Form, the duration of the business disruptions internationally and related financial impact of COVID-19 cannot be reasonably estimated. It is unknown whether and how we may be affected if such an epidemic persists for an extended period of time. In particular, an impacted country or region in which we operate or are headquartered in may not have sufficient public infrastructure to adequately respond or efficiently and quickly recover from such event, which could have a materially adverse effect on our operations, financial condition and/or results of operations. Our exposure to such public health crises also includes risks to employee health and safety. Our operations are located in relatively remote and isolated areas and represent a concentration of personnel working and residing in close proximity to one another. Should an employee or visitor become infected with a serious illness that has the potential to spread rapidly, this could place our workforce at risk.

The Company's operations may be disrupted by labour activity or new and existing labour laws

The Company is dependent on its workforce to extract and process minerals and the operations may be impacted by labour activity. In particular, there can be no guarantee that labour disruptions introduced by unions, employee groups, governmental authorities, among other groups, will not impact on the Company's operations or those of the related industries or suppliers. Labour disruptions at the Company's properties could have a material adverse impact on its business, operating results and financial condition. A significant portion of the Company's employees are represented by various labour unions under various collective bargaining agreements. Any work stoppage at the Company's facilities as a result of labour disruption could have a material adverse effect on the Company's earnings and financial condition.

Any Restrictions in our ability to access a refinery in South Africa could impact our profitability and the operations at our projects

Currently, all of the Company's gold production is transported to and refined by a South African gold refinery. The refinery arranges for the sale of the gold and the Company receives payment for the gold. A percentage of the Company's gold production is also sold to RGLD pursuant to the Stream Transaction. As of the date hereof, the refinery remains in operation, however, uncertainty remains as to whether the refinery will be able to continue to operate as a result of the South African government's enforcement measures implemented in connection with COVID-19. The refinery does have additional back-up facilities located in other continents which, to the extent they continue to operate in light of COVID-19, could be used should the Company be unable to access the South African refinery. Any inability to access one or more refineries could impact our operations, as well as our financial position, results of operations and cash flows.

Outbreak, or threatened outbreak, of any severe communicable disease in West Africa

Malaria, COVID-19 and other diseases such as HIV/AIDS represent a serious threat to maintaining a skilled workforce in the mining industry throughout Africa and are a major healthcare challenge faced by the operations of the Company. There can be no assurance that the Company will not lose members of its workforce or see its workforce man-hours reduced or incur increased medical costs as a result of these health risks, which could materially and adversely affect the business and results of operations of the Company.

The Company’s directors may have conflicts of interest as a result of their relationships with other mining companies

Our directors are also directors, officers and shareholders of other companies, including of La Mancha, that are similarly engaged in the business of developing and exploiting natural resource properties. Consequently, there is a possibility that our directors may be in a position of conflict in the future.

The Company’s operations may be affected by climate change regulations and climate change may present physical risks to the operations

Greenhouse gases are emitted by the Golden Star operations as a result of fuel and energy consumption. While the Company’s operations are not presently subject to specific regulatory measures to address or limit GHG emissions, the Ghanaian Government ratified the 2015 UN Framework Convention on Climate Change also known as the Paris Agreement. The Paris Agreement, which requires developed countries to set targets for emissions reductions, came into force on November 4, 2016 and as a result a number of jurisdictions which have commenced implementation of measures for greenhouse emissions reduction, including carbon-based economy drivers.

In addition, Golden Star’s operations could be exposed to a number of physical risks from climate change, such as changes in rainfall rates or patterns, reduced water availability, higher temperatures and extreme weather events. Such events or conditions, including floodings or inadequate water supplies, could disrupt mining and transport operations, mineral processing and rehabilitation efforts, create resource or energy shortages or damage the company’s property or equipment and increase health and safety risks on site. Such events or conditions could have other adverse effects on the Company’s workforce and on the communities around its mines, such as an increased risk of food insecurity, water scarcity and prevalence of disease, all of which could have a material adverse effect on the Company’s results of operations and financial condition.

Compliance with industry standards and ESG disclosures and reporting could result in increasing cost

Compliance with gold industry standards and reporting against multiple sustainability and environment, social and governance (“ESG”) indices could result in significant costs. Stringent standards relating to responsible gold, including, but not limited to the U.S. Dodd-Frank Act, the World Gold Council Conflict-Free Gold Standard and the World Gold Council Responsible Gold Mining Principles have been introduced. Additionally, the increasing demand for disclosure on performance in regards to ESG and the plethora of disclosure formats and indices being demanded, may result in significant costs to ensure and demonstrate compliance (particularly where standards change rapidly or duplication in reporting is required).

The Company is subject to risks from operating in a single jurisdiction

The Company’s mining operations are located in Ghana, which has at times in its history experienced political and economic instability and other uncertainty including: localised civil unrest, terrorist incursions from neighbouring countries, exposure to epidemic and pandemic illnesses, efforts at resource nationalization, illegal mining and difficult security environments.

In Ghana and West Africa more generally, there is an ongoing focus by governments to enhance economic benefit and increase financial and social benefits from extractive industries and mining in particular.

In 2020 Ghana will undergo national elections. Recent election years have seen various policy positions on small scale mining that have the potential to increase localised incursions of illegal miners. During this stage of an election cycle, bureaucratic processes including land access and permitting may experience delays. Peaceful elections have typified the country for the last 28 years.

In 2019 the Ghanaian Government declared its interest in the proposed West African monetary zone currency, the Eco.

The Ghanaian Government has sought in the past to institute a mining “windfall” tax. With escalating gold price and the election cycle juncture, this plan may be revived. Additionally, the Ghanaian energy sector has a mounting debt, which the Government may seek to minimise through taxes or levies to industry.

Relocation of the Company’s head office

The Company has substantially completed the relocation of its head office to London, U.K. from Toronto, Ontario. The majority of the relocation and termination costs were accrued during the year ended December 31, 2019, therefore the Company expects lower charges to be incurred in 2020. However, the Company may nonetheless incur significant unexpected costs associated with such relocation which could have an adverse impact on the Company’s financial position or results of operations.

Governmental and Regulatory Risks

As a holding company, limitations on the ability of the Company’s operating subsidiaries to make distributions to it could adversely affect the funding of the Company’s operations

Golden Star is a holding company organized under the federal laws of Canada that conducts operations primarily through foreign (principally Ghanaian) subsidiaries, and substantially all of the Company’s assets consist of equity in these entities. Accordingly, any limitation on the transfer of cash or other assets between the parent corporation and these entities, or among these entities, could restrict the Company’s ability to fund its operations efficiently, or to repay the 7% Convertible Debentures, the Credit Facility, or other debt, or on its ability to fulfill its obligations under the Stream Transaction. Any such limitations or the perception that such limitations might exist now or in the future, could have an adverse impact on available credit and the valuation and share price of Golden Star.

The Government of Ghana may make or propose changes to the mining fiscal regime that will have a significant impact on the Company’s overall costs

In 2012, the Government of Ghana announced its intention to introduce a 10% windfall profit tax on mining companies. In 2013, as a result of the decline in spot gold prices, the Government of Ghana suspended its implementation of the proposed windfall profit tax. However, if gold prices increase the Government of Ghana may proceed with its plan to implement the proposed 10% windfall profit tax.

The ITA was passed by Ghana’s Parliament and assented to by the President on September 1, 2015, on which date the ITA entered into force. The implementation of the ITA commenced on January 1, 2016. The significant change in the ITA that may affect the Company is that tax depreciation claims on plant, equipment and mining properties will be included in losses which expire after five years rather than being included in a capital allowance balance that carries forward indefinitely.

The Government of Ghana could review the existing tax stability agreements of mining companies operating in Ghana. While the Company’s mines do not have tax stability agreements, the Government of Ghana could decide to review the Company’s Deeds of Warranty which specify certain tax agreements for its properties. Such a review could result in some of the Company’s financial concessions being revoked or in changes which could have a significant impact on its business, results of operations or financial condition.

The Government of Ghana announced in February 2018 that it would implement a new audit program targeted at mining companies in Ghana. As a result, the Company may be subject to additional audits during the year that could result in the reversal of currently recorded tax losses or additional tax expense.

The Company faces several risks inherent in conducting business internationally, including compliance with U.S., Canadian and international laws and regulations that apply to the Company's international operations

The Company has offices or activities in several jurisdictions, including Canada, the U.K., the U.S., Ghana, other parts of West Africa and Brazil. Accordingly, Golden Star faces several risks inherent in conducting business internationally, including compliance with U.S., Canadian and international laws and regulations that apply to the Company's international operations. These laws and regulations include data privacy requirements, labour relations laws, tax laws, anti-competition regulations, import and trade restrictions, export requirements, the Canadian *Corruption of Foreign Public Officials Act*, the U.K. *Bribery Act*, the U.S. *Foreign Corrupt Practices Act* and other U.S. federal laws and regulations established by the Office of Foreign Asset Control, as well as similar laws in the countries in which Golden Star conducts its business, which laws prohibit corrupt payments to governmental officials or certain payments or remunerations to customers. Given the high level of complexity of these laws, however, there is a risk that some provisions may be inadvertently breached by Golden Star, for example through fraudulent or negligent behavior of individual employees, the Company's failure to comply with certain formal documentation requirements, or otherwise. Violations of these laws and regulations could result in fines, criminal sanctions against the Company, its officers or its employees, requirements to obtain export licences, cessation of business activities in sanctioned countries, implementation of compliance programs, and prohibitions on the conduct of the Company's business. Any such violations could include prohibitions on the Company's ability to conduct business in one or more countries and could materially damage its reputation, its international expansion efforts, its ability to attract and retain employees, its business and its operating results. The Company's success depends, in part, on its ability to anticipate these risks and manage these challenges. These factors or any combination of these factors may adversely affect the Company's revenue or its overall financial performance.

The Company is subject to changes in the regulatory environment where it operates which may increase its costs of compliance

The Company's mining operations and exploration activities are subject to extensive regulation governing various matters, including:

- licensing;
- production;
- taxes;
- disposal of process water or waste rock;
- toxic substances;
- development and permitting;
- exports and imports;
- labour standards;
- mine and occupational health and safety;
- environmental protection and corporate responsibility, and
- mine rehabilitation and closure plans.

Compliance with these regulations increases the costs of the following:

- planning;
- designing;
- drilling;
- operating;
- developing;
- constructing; and
- closure, reclamation and post closure.

Golden Star believes that it is in substantial compliance with current laws and regulations in Ghana and elsewhere. However, these laws and regulations are subject to frequent change and reinterpretation. Amendments to current laws and regulations governing operations and activities of mining companies or more stringent implementation or interpretation of these laws and regulations could have a material adverse impact on Golden Star. These factors could cause a reduction in levels of production and delay or prevent the development or expansion of the Company's properties in Ghana.

The implementation of changes in regulations that limit the amount of proceeds from gold sales that could be withdrawn from Ghana could also have a material adverse impact on the Company, as Wassa and Bogoso/Prestea are currently the only sources of internally generated operating cash flows.

Environmental bonding requirements are under review in Ghana and bonding requirements may be increased

As part of its periodic assessment of mine reclamation and closure costs, the EPA reviews the adequacy of reclamation bonds and guarantees. In certain cases, it has requested higher levels of bonding based on its findings. If the EPA were to require additional bonding at the Company's properties, it may be difficult, if not impossible, to provide sufficient bonding. If the Company is unable to meet any such increased bonding requirements or negotiate an acceptable solution with the Government of Ghana, its operations and exploration and development activities in Ghana may be materially adversely affected.

The Government of Ghana has the right to increase its interest in certain subsidiaries

The Government of Ghana has a 10% carried interest in the mineral operations of Ghanaian mining companies. The carried interest comes into existence at the time the Government issues a mining licence. As such, the Government of Ghana currently has a 10% carried interest in the Company's subsidiaries that own Bogoso/Prestea, Prestea Underground, Wassa, Wassa Underground and Mampon.

The Government of Ghana has the right to acquire a special share or "golden share" in such subsidiaries at any time for no consideration or such consideration as the Government of Ghana and such subsidiaries might agree, and a pre-emptive right to purchase all gold and other minerals produced by such subsidiaries. A "golden share" carries no voting rights and does not participate in dividends, profits or assets. While the Government of Ghana has not sought to exercise any of these rights at the Company's properties, any such attempts to do so in the future could adversely affect the Company's business, results of operations or financial condition.

The Company is subject to risks relating to exploration, development and operations in foreign countries

The Company's business assets and operations are affected by various political and economic uncertainties in the countries where it operates, including:

- war, civil unrest, terrorism, coups or other violent or unexpected changes in government;
- political instability and violence;
- expropriation and nationalization;
- renegotiation or nullification of existing concessions, licences, permits, and contracts;
- illegal mining;
- increase in fees, levies or other indirect taxes;
- changes in taxation policies;
- unilaterally imposed increases in royalty rates, such as the increase in royalty rates imposed by the Government of Ghana, effective March 2011, which changed the method of calculating the royalties from not less than 3% and not more than 6% of a mine's total mineral revenues to a flat rate of 5% of mineral revenues;
- restrictions on foreign exchange and repatriation; and
- changing political conditions, currency controls, and governmental regulations that favor or require the awarding of contracts to local contractors or require foreign contractors to employ citizens of, or purchase supplies from, a particular jurisdiction.

Illegal mining, which has occurred on the Company's properties and is difficult to control, can disrupt its business and can expose the Company to liability

The Company continues to experience illegal mining activity on its mining and exploration properties. While Golden Star is proactively working with local, regional and national governmental authorities to obtain protection of the Company's property rights, any action on the part of such authorities may not occur, may not fully address the Company's problems or may be delayed.

In addition to the impact on the Company's mineral reserves and mineral resources, the presence of illegal miners can lead to project delays and disputes and delays regarding the development or operation of commercial gold deposits. Illegal miners could cause environmental damage or other damage to the Company's properties, or personal injury or death, for which the Company could potentially be held responsible. Illegal miners may work on other of the Company's properties from time to time, and they may in the future increase their presence and have increased negative impacts such as those described above on such other properties.

The Company's activities are subject to complex laws, regulations and accounting standards that can adversely affect operating and development costs, the timing of operations, the ability to operate its mines and the Company's financial results

The Company's business, mining operations and exploration and development activities are subject to extensive Canadian, United States, Ghanaian and other foreign, federal, state, provincial, territorial and local laws and regulations governing exploration, development, production, exports, taxes, labour standards, waste disposal, protection of the environment, reclamation, historic and cultural resource preservation, mine safety and occupational health, toxic substances, reporting and other matters, as well as accounting standards. Compliance with these laws, regulations and standards or the imposition of new requirements could adversely affect exploration, operating and development costs, the timing of operations and the ability to operate, as well as the Company's financial results.

Failure to maintain effective internal controls could have a material adverse effect on the Company's business and share price

Annually, Golden Star is required to test its internal controls over financial reporting to satisfy the requirements of applicable securities laws, which requires annual management assessments of the effectiveness of the Company's internal controls over financial reporting. Failure to maintain effective internal controls could have a material adverse effect on the business and share price of Golden Star.

Market Risks

The market price of the Company's common shares has experienced volatility and could continue to do so in the future

The Company's common shares are listed on NYSE, the TSX and the GSE. Companies with market capitalizations similar to Golden Star have experienced substantial volatility in the past, often based on factors unrelated to the financial performance or prospects of the companies involved. These factors include macroeconomic developments in North America and globally and market perceptions of the attractiveness of particular industries. The Company's share price is also likely to be significantly affected by short-term changes in gold prices or in its financial condition or results of operations as reflected in its quarterly earnings reports. Other factors unrelated to the Company's performance that could have an effect on the price of its common shares include the following:

- the extent of analytical coverage available to investors concerning the Company's business could be limited if investment banks with research capabilities do not continue to follow the Company's securities;
- the trading volume and general market interest in the Company's securities could affect an investor's ability to trade significant numbers of the Company's common shares;
- the size of the public float in the Company's common shares may limit the ability of some institutions to invest in the Company's securities; and
- a substantial decline in the Company's share price that persists for a significant period of time which could cause the Company's securities to be delisted from NYSE, the TSX and/or the GSE, further reducing market liquidity.

As a result of any of these or other additional factors, the market price of the Company's common shares at any given point in time might not accurately reflect its long-term value. Stock markets in general have recently experienced higher levels of volatility. Additionally, any negative change in the public's perception of the Company's prospects could cause the price of the Company's common shares to decrease dramatically. Furthermore, any negative change in the public's perception of the prospects of mining companies in general could depress the price of the Company's securities regardless of the Company's results.

Investors could have difficulty or be unable to enforce certain civil liabilities on the Company

A majority of the Company's assets are located outside of Canada and the United States. Accordingly, it may not be possible for investors to collect judgments obtained in Canadian courts predicated on the civil liability provisions of Canadian securities legislation or other laws, or to realize upon the Company's assets in connection with such judgments. Similarly, it may not be possible for investors to collect judgments obtained in U.S. courts predicated on the civil liability provisions of U.S. securities legislation or to realize upon the Company's assets in connection with such judgments.

The Company has subsidiaries located in Ghana and the Cayman Islands, among other places, and carries on the majority of its operations in Ghana. It may be difficult for an investor to assert Canadian securities law or other law claims in original actions instituted in Ghana or the Cayman Islands. Courts in these jurisdictions may refuse to hear a claim based on a violation of

Canadian securities law or other laws on the grounds that such jurisdiction is not the most appropriate forum to bring such a claim. Even if a foreign court agrees to hear a claim, it may determine that the local law, and not Canadian law, is applicable to the claim. If Canadian law is found to be applicable, the content of applicable Canadian law must be proven as a fact, which can be a time-consuming and costly process. Certain matters of procedure will also be governed by foreign law.

Canadian investors should be aware that Craig J. Nelsen, Gil Clausen, Karim Nasr, Mona Quartey and Andrew Wray, each a director of the Company, are located outside of Canada and, as a result, it may not be possible for Canadian investors to effect service of process within Canada upon these persons. All or a substantial portion of the assets of these persons are likely to be located outside of Canada and, as a result, it may not be possible to satisfy a judgment against such persons in Canada or to enforce a judgment obtained in Canadian courts against such persons outside of Canada.

There are certain U.S. federal income tax risks associated with ownership of Golden Star common shares

To ensure compliance with requirements imposed by the Internal Revenue Service, any U.S. federal tax advice contained in this communication (including any attachments) is not intended or written to be used, and cannot be used, for the purpose of avoiding penalties under the Internal Revenue Code. This communication is used to promote the marketing of the securities described herein, and each potential investor should seek advice based on the investor's particular circumstances from an independent tax advisor.

Holders of the Company's common shares who are U.S. persons for U.S. federal income tax purposes ("U.S. Holders") should consider that Golden Star may be or could become a "passive foreign investment company" ("PFIC") for U.S. federal income tax purposes. The tests for determining PFIC status depend upon a number of factors, some of which are beyond the Company's control, and can be subject to uncertainties, and the Company cannot assure you that it will not be a PFIC for the year ending December 31, 2019, or any future year. The Company undertakes no obligation to advise holders of its common shares as to its PFIC status for the year ending December 31, 2019, or any future year.

If the Company is a PFIC for any year, a U.S. Holder whose holding period for common shares of the Company includes any portion of a year in which the Company is a PFIC generally would be subject to a special adverse tax regime in respect of "excess distributions." Excess distributions include certain distributions received with respect to PFIC shares in a taxable year. Gains recognized by a U.S. Holder on a sale or other transfer of the Company's common shares (including certain transfers that would otherwise be tax free) also would be treated as excess distributions. Such excess distributions and gains would be allocated ratably to the U.S. Holder's holding period. For these purposes, the holding period of shares acquired either through an exercise of options or the conversion of convertible debentures includes the U.S. Holder's holding period in the option or convertible debt.

The portion of any excess distribution (including gains treated as excess distributions) allocated to the current year or to a year prior to the first year in which the Company was a PFIC would be includible as ordinary income in the current year. The portion of any excess distribution allocated to the first year in the U.S. Holder's holding period in which the Company was a PFIC and any subsequent year or years (excluding the current year) would be taxed at the highest marginal rate applicable to ordinary income for each such year (regardless of the taxpayer's actual marginal rate for that year and without reduction by any losses or loss carryforwards) and would be subject to interest charges to reflect the value of the U.S. income tax deferral.

Elections may be available to mitigate the adverse tax rules that apply to PFICs (the so-called "QEF" and "mark-to-market" elections), but these elections may cause the recognition of taxable income or gain. The QEF and mark-to-market elections are

not available to U.S. Holders with respect to options or convertible securities. The Company has not decided whether it would provide to U.S. holders of its common shares the annual information that would be necessary to make the QEF election.

Additional special adverse rules also apply to U.S. Holders who own the Company's common shares if the Company is a PFIC and has a non-U.S. subsidiary that is also a PFIC. Special adverse rules that impact certain estate planning goals could apply to the Company's common shares if the Company is a PFIC.

The conversion feature of the Company's 7% Convertible Debentures could limit increases in the trading price of the Company's common shares

The conversion price of the Company's outstanding 7% Convertible Debentures is \$4.50 per share. During periods when the Company's share price is greater than the conversion price, such conversion price may limit the increase in the price of the common shares, since any increase in the price of the common shares above the conversion price will make it more likely that the 7% Convertible Debentures will be converted, thereby exerting a downward pressure on the market price of the common shares.

The existence of outstanding rights to purchase or acquire common shares could impair the Company's ability to raise capital

As of March 24, 2020, there were options outstanding to purchase up to 3,382,052 common shares at exercise prices ranging from Cdn.\$1.90 to Cdn.\$14.15 per share. In addition, 4,714,484 common shares are available for future issuance under the Company's U.K. performance share unit plan. Finally, approximately 11,444,000 common shares are currently issuable upon the full conversion of the Company's outstanding 7% Convertible Debentures (additional shares may be issuable to debenture holders in certain circumstances). During the life of the options, 7% Convertible Debentures, warrants and other rights, the holders are given an opportunity to profit from a rise in the market price of the Company's common shares, with a resulting dilution in the interest of the other shareholders. The Company's ability to obtain additional financing, during the period such rights are outstanding, could be adversely affected, and the existence of such rights could have an adverse effect on the price of the Company's common shares. The holders of the options, 7% Convertible Debentures, warrants and other rights can be expected to exercise or convert them at a time when the Company would, in all likelihood, be able to obtain any needed capital by a new offering of securities on terms more favorable than those provided by the outstanding rights.

Current global financial conditions may affect the Company's ability to obtain financing and may negatively affect its asset values and results of operations

Global financial conditions during recent years, and during the current year as a result of the COVID-19 pandemic, have been characterized by heightened volatility and uncertainty. As a result, access to financing has been negatively impacted, which may affect the Company's ability to obtain equity or debt financing in the future on favorable terms or at all. Additionally, these factors, as well as other related factors, may cause decreases in asset values that are deemed to be other than temporary, which may result in impairment losses. If such increased levels of volatility and market turmoil continue or worsen, the Company's operations could be adversely impacted and the trading price of the common shares may be adversely affected.

Shareholders are subject to potential dilution from future financings

Future sales or issuances of debt or equity securities could decrease the value of any existing common shares, dilute investors' voting power, reduce the Company's earnings per share and make future sales of the Company's equity securities more difficult. With any additional sale or issuance of equity securities, investors will suffer dilution of their voting power and may experience

dilution in the Company's earnings per share. Sales of common shares by shareholders might also make it more difficult for the Company to sell equity securities at a time and price that it deems appropriate.

Golden Star may sell or issue additional debt or equity securities in offerings to finance its operations, exploration, development, acquisitions or other projects. Golden Star cannot predict the size of future sales and issuances of debt or equity securities or the effect, if any, that future sales and issuances of debt or equity securities will have on the market price of the common shares.

Sales or issuances of a substantial number of equity securities, or the perception that such sales could occur, may adversely affect prevailing market prices for the common shares.

The common share price has experienced volatility and may be subject to fluctuation in the future based on market conditions

The market prices for the securities of mining companies, including securities of the Company, have historically been highly volatile. The market has from time to time experienced significant price and volume fluctuations that are unrelated to the operating performance of any particular company. In addition, because of the nature of the Company's business, certain factors such as its announcements and the public's reaction, its operating performance and the performance of competitors and other similar companies, fluctuations in the market prices of the Company's resources, government regulations, changes in earnings estimates or recommendations by research analysts who track the Company's securities or securities of other companies in the resource sector, general market conditions, announcements relating to litigation, the arrival or departure of key personnel and the factors listed under the heading "Cautionary Statement Regarding Forward-Looking Statements" can have an adverse impact on the market price of the common shares.

Any negative change in the public's perception of Golden Star's prospects could cause the price of the Company's securities, including the price of the common shares, to decrease dramatically. Furthermore, any negative change in the public's perception of the prospects of mining companies in general could depress the price of the Company's securities, including the price of the common shares, regardless of the Company's results. Following declines in the market price of a company's securities, securities class-action litigation could be instituted. Litigation of this type, if instituted, could result in substantial costs and a diversion of the Company's management's attention and resources.

The Company does not intend to pay dividends in the foreseeable future

Golden Star has never declared or paid any dividends on the common shares. The Company intends, for the foreseeable future, to retain its future earnings, if any, to finance its development and exploration activities. The payment of future dividends, if any, will be reviewed periodically by the Board and will depend upon, among other things, conditions then existing including earnings, financial condition, cash on hand, financial requirements to fund the Company's exploration activities, development and growth, and other factors that the Board may consider appropriate in the circumstances.

The Company's ability to generate the cash needed to pay interest and other amounts due on the 7% Convertible Debentures and service any other debt depends on many factors, some of which are beyond the Company's control.

In order to fund the Company's debt service obligations and to pay amounts due on the 7% Convertible Debentures, it will require significant amounts of cash. Golden Star's ability to generate cash from its operations to meet scheduled payments, to satisfy other amounts due on the 7% Convertible Debentures or to refinance its debt will depend on the Company's financial and operating performance, which, in turn, is subject to the risk factors described in this Annual Information Form. Some of these risks are

beyond the Company's control. If the Company's cash flow and capital resources are insufficient to fund its debt obligations, the Company may be forced to reduce or delay expenditures, sell assets, seek to obtain additional equity capital or restructure its debt.

The ability of the Company's subsidiaries to pay dividends to it could be restricted

Substantially all of Golden Star's assets consist of equity in its subsidiaries. Future borrowings by the Company's subsidiaries could contain restrictions or prohibitions on the payment of dividends to the Company. In addition, under applicable law, the Company's subsidiaries could be limited in the amounts that they are permitted to pay the Company as dividends on their capital stock. As a result, Golden Star may not be able to receive funds from its subsidiaries to service the Company's debt.

Provisions in the indenture for the 7% Convertible Debentures could discourage an acquisition of the Company by a third party, even if the acquisition would be favorable to shareholders

If a "fundamental change" (as defined in the indenture for the 7% Convertible Debentures) occurs, the Company will be required to offer to purchase all of the outstanding 7% Convertible Debentures. In the event of a "make-whole fundamental change," the Company may also be required to increase the conversion rate applicable to the 7% Convertible Debentures surrendered for conversion in connection with such make-whole fundamental change. In addition, the indenture for the 7% Convertible Debentures prohibits Golden Star from engaging in certain mergers or acquisitions unless, among other things, the surviving entity assumes the Company's obligations under the 7% Convertible Debentures. These provisions could prevent or deter a third party from acquiring Golden Star even where the acquisition could be beneficial to shareholders.

DIVIDEND POLICY AND PAYMENT

We have not declared or paid cash dividends on the Company's common shares since its inception and the Company expects for the foreseeable future to retain all of its earnings from operations for use in expanding and developing its business. Future dividend decisions will consider then current business results, cash requirements and the Company's financial condition.

LEGAL PROCEEDINGS AND REGULATORY ACTIONS

There are currently no material pending legal proceedings or regulatory actions to which the Company or any of its subsidiaries is a party or to which any of its properties or those of any of its subsidiaries is subject. The Company and its subsidiaries are, however, engaged in routine litigation incidental to their business. No material legal proceedings or regulatory actions involving the Company are pending, or, to the knowledge of the Company, contemplated, by any governmental authority. The Company is not aware of any material events of non-compliance with environmental laws and regulations. The exact nature of environmental control problems, if any, which the Company may encounter in the future cannot be predicted, primarily because of the changing character of environmental requirements that may be enacted within foreign jurisdictions.

CAPITAL STRUCTURE

The Company is authorized to issue an unlimited number of common shares. As at December 31, 2019, there were 109,385,063 common shares issued and outstanding. As of March 24, 2020, 109,602,561 common shares were issued and outstanding.

The Company is also authorized to issue an unlimited number of first preferred shares. As at December 31, 2019, there were no first preferred shares issued and outstanding. As of March 24, 2020, there were no first preferred shares issued and outstanding.

Description of common shares

All common shares are of the same class and, once issued, rank equally as to dividends, voting powers, and participation in assets.

Dividend Rights

Holders of common shares are entitled to receive such dividends as may be declared from time to time by the Board, in its discretion, subject to the preferential dividend rights of any other classes or series of shares of the Company. In no event may a dividend be declared or paid on the common shares if payment of the dividend would cause the realizable value of Golden Star's assets to be less than the aggregate of its liabilities and the amount required to redeem all of the shares having redemption or retraction rights, which are then outstanding.

Voting Rights

Holders of common shares are entitled to one vote for each share held of record on all matters to be acted upon by the shareholders.

Liquidation

In the event of any liquidation, dissolution or winding up of Golden Star, holders of common shares have the right to a ratable portion of the assets remaining after payment of liabilities and liquidation preferences of any preferred shares or other securities that may then be outstanding.

Redemption

No shares have been issued subject to call or assessment. There are no pre-emptive or conversion rights and no provisions for redemption or purchase for cancellation, surrender, or sinking or purchase funds.

Other Provisions

All outstanding common shares are fully paid and non-assessable.

This section is a summary and may not describe every aspect of the Company's common shares or preferred shares that may be important to you. We urge you to read the *Canada Business Corporations Act* and the Company's articles of arrangement, because they, and not this description, define the rights of a holder of Golden Star's common shares or preferred shares.

Description of Preferred Shares

The Company is authorized to issue an unlimited number of preferred shares. Preferred shares are issuable in such classes or series as are determined by the Board, who has the authority to determine the relative rights and preferences of each such class or series. The Board has not designated any class or series of preferred shares.

Description of 7% Convertible Debentures

The 7% Convertible Debentures were issued on August 3, 2016, in the aggregate principal amount of \$65.0 million (current balance \$51.5 million). The 7% Convertible Debentures were issued in denominations of integral multiples of \$1,000 principal amount. As part of the private placement offering, the Company exchanged \$42.0 million principal amount of its 5% Convertible Debentures due June 1, 2017, in privately negotiated transactions with certain holders of the 5% Convertible Debentures.

The 7% Convertible Debentures are governed by the terms of an indenture dated August 3, 2016, by and between the Company and The Bank of New York Mellon, as Indenture Trustee.

Interest on the 7% Convertible Debentures is payable semi-annually in arrears on February 1 and August 1 of each year until maturity on August 15, 2021. The 7% Convertible Debentures are, subject to certain limitations, convertible into common shares at a conversion rate of 222.2222 common shares per \$1,000 principal amount of the 7% Convertible Debentures (equal to an initial conversion price of \$4.50 per share).

All or a portion of the 7% Convertible Debentures are redeemable at the Company's option, on or after August 15, 2019, if the daily volume weighted average price of the common shares for 20 or more trading days in a period of 30 consecutive trading days (ending on the trading day prior to the date the Company exercises its option to redeem) exceeds 130% of the initial conversion price. The redemption price includes a redemption make-whole payment in cash, common shares or a combination thereof, at the Company's election, to the converting holder equal to the sum of the present value of the scheduled payments of interest that would have been made on the 7% Convertible Debentures from the conversion date to August 15, 2021, subject to certain limitations.

If a "fundamental change" (as defined in the indenture for the 7% Convertible Debentures) occurs, the Company will be required to offer to purchase all of the outstanding 7% Convertible Debentures for cash for 100% of the principal amount. In the event of a "make-whole fundamental change," the Company may also be required to increase the conversion rate applicable to the 7% Convertible Debentures surrendered for conversion in connection with such make-whole fundamental change. In addition, the indenture for the 7% Convertible Debentures prohibits Golden Star from engaging in certain mergers or acquisitions unless, among other things, the surviving entity assumes the Company's obligations under the 7% Convertible Debentures.

MARKET FOR GOLDEN STAR SECURITIES

The Company's common shares trade on the TSX under the trading symbol GSC, on NYSE under the symbol GSS and on the Ghana Stock Exchange under the symbol GSR.

The following table sets forth the high, low and market closing prices per common share on a monthly basis as reported by, and monthly trading volume on, the TSX and NYSE during the financial year ending December 31, 2019.

TSX: GSC	Cdn\$ High	Cdn\$ Low	Cdn\$ Close	Volume
January	\$4.61	\$4.37	\$ 4.53	657,399
February	\$5.18	\$4.97	\$ 5.08	578,160
March	\$5.19	\$4.91	\$ 5.08	631,106
April	\$5.75	\$5.49	\$ 5.63	918,869
May	\$5.26	\$5.06	\$5.15	570,445
June	\$4.99	\$4.68	\$ 4.84	1,302,900
July	\$5.73	\$5.42	\$ 5.59	2,487,270
August	\$4.18	\$3.90	\$ 4.02	3,328,730
September	\$4.25	\$4.00	\$ 4.13	2,064,097
October	\$4.05	\$3.86	\$ 3.95	1,299,843
November	\$4.28	\$4.10	\$ 4.18	941,221
December	\$4.61	\$4.41	\$ 4.51	1,198,105

NYSE: GSS	US\$ High	US\$ Low	US\$ Close	Volume
January	\$ 3.47	\$ 3.30	\$ 3.41	751,638
February	\$ 3.92	\$ 3.77	\$ 3.85	931,759
March	\$ 3.88	\$ 3.69	\$ 3.80	1,260,895
April	\$ 4.29	\$ 4.11	\$ 4.20	901,820
May	\$ 3.93	\$ 3.78	\$ 3.84	913,348
June	\$ 3.76	\$ 3.53	\$ 3.66	2,627,301
July	\$ 4.37	\$ 4.13	\$ 4.26	3,195,155
August	\$ 3.16	\$ 2.96	\$ 3.06	3,326,499
September	\$ 3.20	\$ 3.02	\$ 3.12	2,966,448
October	\$ 3.07	\$ 2.93	\$ 3.00	1,133,630
November	\$ 3.24	\$ 3.09	\$ 3.15	2,209,472
December	\$ 3.50	\$ 3.35	\$ 3.43	1,945,909

DIRECTORS AND OFFICERS

As of March 24, 2020, executive officers and directors of the Company beneficially owned, or controlled or directed, directly or indirectly, 334,852 common shares of the Company, representing approximately 0.31% of the issued and outstanding common shares of the Company.

DIRECTORS

The Company's Board and senior management team have considerable experience conducting business in Ghana and elsewhere in Africa and certain members of the Company's senior management team reside in Ghana.

Set forth below is information regarding the directors of Golden Star as of the date of this Annual Information Form.

Name and place of residence	Director since
TIM BAKER, Toronto, Ontario, Canada ¹	January 1, 2013
GILMOUR CLAUSEN, Denver, Colorado, USA ^{2,3}	July 18, 2016
ANU DHIR, Toronto, Ontario, Canada ^{2,4}	February 21, 2014
ROBERT E. DOYLE, Toronto, Ontario, Canada ^{5,6}	February 2, 2010
ANI MARKOVA, Toronto, Ontario, Canada ^{4,6}	September 5, 2019
KARIM NASR, London, England ⁴	February 3, 2020
CRAIG J. NELSEN, Centennial, Colorado, USA ^{2,3,5}	May 11, 2011
MONA QUARTEY, Accra, Ghana ^{5,6}	May 4, 2017
ANDREW WRAY, London, England	October 1, 2018

Notes:

1. **Chairman of the Board**
2. **Member of the Nominating and Corporate Governance Committee**

3. **Member of the Technical Committee**
4. **Member of the Corporate Responsibility Committee**
5. **Member of the Compensation Committee**
6. **Member of the Audit Committee**

The terms of office of each director of the Company will expire at the next annual meeting of shareholders of the Company or when their successors are duly elected or appointed.

At the annual, general and special meeting of shareholders of the Company to be held on May 7, 2020, the Company has nominated for election the nine current directors.

Below is a biography of each of the directors of Golden Star:

Tim Baker

Mr. Baker was appointed Executive Chairman of the Company effective January 1, 2013. Mr. Baker's title was amended to non-Executive Chairman on November 1, 2013. Mr. Baker served as the Chief Operating Officer and Executive Vice President of Kinross Gold Corporation from June 2006 to November 2010. Mr. Baker, who earned his BSc in Geology from Edinburgh University in 1974, has substantial experience in operating mines and projects, including projects in Chile, the United States, Africa and the Dominican Republic. Prior to working with Kinross Gold Corporation, Mr. Baker served as an Executive General Manager of Placer Dome Chile, where he was responsible for the Placer Dome operations, including at the Zaldivar mine and Kinross-Placer joint venture at La Coipa as well as the Pueblo Viejo project in the Dominican Republic. Mr. Baker was an independent director of Aurelian Resources Inc. from September 2008 to October 2010, Augusta Resources Corporation from September 2008 to September 2014, Underworld Resources Inc from May 2010 to January 2011, Eldorado Gold Corporation from May 2011 to December 2012, Pacific Rim Mining Corp. from March 2012 to 27 November 2013, and Rye Patch Gold Corp. from December 2016 to May 2018. Mr. Baker's extensive and ongoing experience as a director of a wide spectrum of companies and as an executive of various mining companies makes him a vital part of the Board of Directors.

Gilmour Clausen

Mr. Clausen is a mining executive with more than 30 years' experience in the areas of management, finance, development and operations in the precious and base metals industry. He has led major mining operations and managed large engineering and construction projects. Mr. Clausen is currently President, Chief Executive Officer and director of Copper Mountain Mining Corporation. Prior to this, Mr. Clausen was President, CEO and director of Brio Gold Inc. from its inception in December 2014 until its acquisition by Leagold Mining in May 2018. Mr. Clausen was the President, Chief Executive Officer and a director of Augusta Resource Corporation from March 28, 2005 until Augusta was taken over by HudBay Minerals in July 2014. Mr. Clausen was the Executive Vice President, Mining at Washington Group International, Inc. from 2001 to 2005 and served as the Vice President of Operations at Stillwater Mining Company from 1995 to 1999. Mr. Clausen is a Professional Engineer with Bachelor's and Master's degrees in Mining Engineering from Queen's University. He is a graduate of Queen's University's executive business program. Mr. Clausen served as a director of Arizona Mining Inc. from December 2010 to February 2015. He brings intimate knowledge of board governance, corporate and project finance, strategic planning, operations as well as strengths in investor and public relations.

Anu Dhir

Ms. Anu Dhir is a co-founder and executive of ZinQ Mining, a private base metals and precious metals royalty company that focuses on the Latin America region. Ms. Dhir is also the Managing Director of Miniqs Limited, a private group primarily interested in developing resource projects. Prior to Miniqs and ZinQ Mining, Ms. Dhir was Vice President, Corporate Development and Company Secretary at Katanga Mining Limited. Ms. Dhir is a graduate of the General Management Program (GMP) at Harvard Business School, she has a law degree (Juris Doctor) from Quinnipiac University and a Bachelor of Arts from the University of Toronto.

Robert E. Doyle

From January 2008 to October 2009, Mr. Doyle was Chief Executive Officer of Medoro Resources Ltd. (pursuant to a merger in June 2011, Medoro is now known as Gran Colombia Gold Corp.), a Canadian gold exploration and development company with activities in Africa and South America. Mr. Doyle was with Pacific Stratus Energy as Executive Vice President from 2005 through 2006, Chief Financial Officer from October 2006 to May 2007 and Vice President from March 2006 to May 2007. He also was Chief Financial Officer of Coalcorp Mining Inc. from November 2005 to May 2007 and Chief Financial Officer of Bolivar Gold Corp. from January 2003 to February 2006. Mr. Doyle formerly served as a director of Gran Colombia Gold Corp and as a director and member of the Audit and Technical Committees of Detour Gold Corporation. Mr. Doyle, a chartered accountant and a chartered director, has over 30 years' experience in all facets of international resource exploration, development and production. Mr. Doyle brings a broad skill set of the Board of Directors, including a thorough understanding of operations, accounting and financial strategy of international mining companies.

Ani Markova

Ani Markova is a Senior Executive with over 20 years of capital markets involvement and more than 25 years of overall work experience with predominant focus on qualitative and quantitative financial analysis, capital allocation and marketing. Ms. Markova is an award-winning portfolio manager and has spent more than 15 years investing in the global mining sector and commodity markets while at AGF Investments Inc. from August 2003 until January 2019. She is actively engaged with public companies on Environmental, Social and Governance (ESG) topics and the integration of such factors in investment decision making processes. Ms. Markova is currently also an independent director of SilverCrest Metals Inc. Ms. Markova holds an MBA from George Washington University in Washington DC, Chartered Financial Analyst (CFA), Canadian Investment Management (CIM) and Corporate Board International (CDI.D) designations.

Karim Nasr

Mr. Nasr was appointed CEO of La Mancha, a privately held gold mining investment company with a portfolio of assets of over US\$1bn in Australia and West Africa, in May 2019 after having served as its CFO from February 2018.

From November 2011 to January 2018, Mr. Nasr was the CEO and Chief Investment Officer of Digital World Capital, an FCA regulated investment manager investing globally and across the capital structure in telecom and media companies. From 2001 to 2011, Mr. Masr oversaw the corporate finance function of Wind Telecom, one of the largest mobile operators by subscribers, where he led over 225 financing and investment projects in the telecom sector. From 1996 to 1999, Mr. Masr was the CEO of Anzima s.a.l., a Lebanese IT consulting and software firm. He started his career in 1995 at An-Nahar s.a.l., a Lebanese print media group.

Craig J. Nelsen

Mr. Nelsen was a founder, and has served as President, Chief Executive Officer and a member of the Board of Directors, of Avanti Mining Inc. from May 2007 until October 1, 2013. He served as Executive Chairman of Avanti Mining Inc until his retirement in May 2015. From 1999 to June 2007, Mr. Nelsen served as the Executive Vice-President, Exploration, for Gold Fields Limited, one of the world's largest gold mining companies. Mr. Nelsen was the founder, and served as Chairman of the board of directors, of Metallica Resources Inc. from 1994 to 2008, and was Metallica's Chief Executive Officer from 1994 to 1999. In June 2008, a three-company merger between Metallica, Peak Gold, and New Gold Inc. was finalized, forming the new, larger gold producer known as New Gold Inc., which is listed on both the TSX and NYSE. From June 2008 to May 2012, Mr. Nelsen served as a member of the board of directors of New Gold Inc. Mr. Nelsen holds a M.S. degree in geology from the University of New Mexico and a B.A. degree in geology from the University of Montana. Mr. Nelsen's experience includes, among other things, his knowledge in mineral property evaluation, including resource and reserve assessment; international mining; mergers and acquisitions; exploration and mine operations; health, safety, environment and community relations; company formation and strategic planning.

Mona Quartey

The Honorable Mrs. Quartey is Managing Partner and Founding Director of BVM Advisory Services (GH) Ltd and has been with BVM Advisory since its inception in January 2000. She is also currently a director of BVM Advisory. She is a finance executive with more than 26 years' experience in the areas of management, finance, development and operations in the precious metals industry, banking and public finance. She has led major mining treasury, corporate and project finance operations, and recently managed the real sector, revenue and tax policies of the government of Ghana. Mrs. Quartey was the Group Treasurer of Ashanti Goldfields Company from October 1991 until 1999 when she resigned to set up her advisory firm. She worked for Citibank NA in the USA from 2004 until 2008 when she returned to Ghana to continue running her advisory firm. Mrs. Quartey was the Deputy Finance Minister of the Republic of Ghana from 2014 to 2017 and served as alternate Governor to the World Bank Board and African Development Bank Board during same time. Mrs. Quartey holds a Bachelor's degree in Development Planning from Kwame Nkrumah University of Science and Technology and a Master's degree in Business Administration (Finance) from Dalhousie University. She received a LLM (International Commerce) degree from Salford University, U.K in July 2018. Mrs. Quartey served as a director of GCB Bank Ghana Ltd. from July 2014 to January 2017, Ghana Water Company Ltd. from January 2013 to January 2017, Ghana Investment Promotion Centre, GH from July 2014 to January 2017, Social Security National Investment Trust, GH from July 2014 to January 2017 and SIMNET Ghana Ltd. July 2013 to August 2016. She is also a director of Mona Foods (GH) Ltd., an agricultural processing company. Mrs. Quartey is also currently a director of Golden Star Resources Ghana Wassa and Prestea mines, MOKASA Women's Trust Foundation (Ghana) and Green Pastures & Still Waters (GH) Ltd.

Andrew Wray

Mr. Wray is the President and Chief Executive Officer of Golden Star. Prior to being appointed the Company's President and Chief Executive Officer on May 1, 2019, Mr. Wray was the Chief Executive Officer of the La Mancha Group, one of the largest direct investors in the gold mining sector. Prior to that, he was Chief Financial Officer of Acacia Mining Plc, a UK listed company and one of the largest African gold producers. He also has significant experience advising companies in capital-raising activities and other strategic objectives in a range of sectors, including mining, from his time in the Corporate Finance team at JP Morgan Cazenove. He is a fluent Spanish speaker and spent several years at the Kuwait Investment Office in London dealing with its portfolio of investments in Spain. He holds an Honours Degree from University College London as well as postgraduate studies in Finance and Investment from South Bank University Business School.

EXECUTIVE OFFICERS

The following table sets forth the names of each of the executive officers of Golden Star and all offices held by each of them as of the date of this Annual Information Form.

Name ¹	Office Held
ANDREW WRAY, London, England	President and Chief Executive Officer
GRAHAM CREW, London, England	Executive Vice President and Chief Operating Officer
PAUL THOMSON, London, England	Executive Vice President and Chief Financial Officer
NATHALIE LION HADDAD, London, England	Executive Vice President, Head of People
PETER SPORA, London, England	Executive Vice President, Growth & Exploration
PHILIPA VARRIS, London, England	Executive Vice President, Head of Sustainability

Below is a biography of each of the executive officers of Golden Star who is not also a director of Golden Star:

Graham Crew

Mr. Crew has over 25 years of operational, technical and corporate experience in the mining industry. Mr. Crew was appointed as one of La Mancha's director nominees of Golden Star in October 2018. In July 2019, Mr. Crew stepped down from the Board and was appointed Executive Vice President, Chief Operating Officer. A mining engineer by background, he was most recently General Manager Mining for Barmenco Limited, a global underground mining services company. He previously held the positions of General Manager of the Bulyanhulu mine for Acacia Mining, Operations Manager for La Mancha's Australian operations and has held a number of other technical and operational positions for mining companies in various geographies. Graham has a strong track record of transforming operations through the development of vision and strategy with disciplined implementation. His broad experience, which also includes construction projects, due diligence, project evaluation and project financing, is expected to significantly contribute to optimization of Golden Star's current assets, and in developing the future growth and success of the Company. Mr. Crew holds a Bachelor's degree in Mining Engineering from West Australian School of Mines and is a Fellow of the AusIMM.

Paul Thomson

Mr. Thomson joined Golden Star in February 2020. Mr. Thomson has over 25 years of finance and capital markets experience, predominantly in the mining industry. He has held a number of finance, corporate finance and business development roles at mining companies including Aureus Mining, Berkeley Energia and Kazakhmys. At Aureus Mining and Berkeley Energia he held the position of Chief Financial Officer. He is a chartered accountant and started his career at Ernst & Young.

Nathalie Lion Haddad

Ms. Lion Haddad has over 25 years of experience in the human resources field. Ms. Lion Haddad joined Golden Star in September 2019, prior to which she was the Vice President, Human Resources with Sherritt International Corporation and, prior to that, Director, Human Resources of the Ambatovy Joint Venture in Madagascar from 2012 to 2016. Previous positions include Director, Human Resources with LG Electronics (France), BHP Billiton (Algeria), The Executive Office (Dubai), Mead Packaging Europe, Shell Gabon and the University of North London. Ms. Lion Haddad has a Masters Degree in English Language and Business from the New Sorbonne University Paris University, a Certificate in Training Practice (from the Chartered Institute for Personnel Development, England) and is an MBTI® certified practitioner.

Peter Spora

Mr. Spora was appointed Executive Vice President Exploration & Growth of the Company, effective November 1, 2019. Mr. Spora has over 25 years of exploration, technical and corporate experience in the mining industry. He has held senior and executive positions with Homestake Gold Australia, Barrick Gold Corporation in Australia and Africa, and Acacia Mining plc throughout Africa and, most recently, was Head of Discovery for La Mancha Services UK. Mr. Spora has a track record of developing a strong pipeline of exploration and development projects as well as executing on greenfield and brownfield exploration strategy through systematic and disciplined implementation of processes. In addition to exploration experience, he has experience in corporate and operational due diligence and project evaluation and acquisition. Mr. Spora holds a Bachelor's Degree in Applied Science, Geology from The University of Technology, Sydney.

Philipa Varris

Ms. Varris has over 25 years of environmental, communities, health and safety experience in the mining industry. Ms. Varris joined Golden Star in 2011 and most recently held the role of Vice President, Corporate Responsibility prior to which she held roles managing environment, safety, health and communities functions for Rio Tinto's Energy Resources of Australia, Harmony Gold's Hidden Valley operations, Bendigo Mining and Goldfields Australia. Ms. Varris holds Honours and Masters degrees in Natural Resources from Curtin University of Technology, is a Chartered Professional (Environment) with the AusIMM, a Corporate Directors International certified board candidate and certified trainer, assessor and HSE auditor. In 2001 Ms. Varris was awarded the Centenary Medal by the Prime Minister of Australia for leadership in Australia's largest community consultation and strategic vision development exercise.

CEASE TRADE ORDERS, BANKRUPTCIES, PENALTIES OR SANCTIONS

Except as described below, to the best of Golden Star's knowledge, no director or executive officer of Golden Star or a shareholder holding a sufficient number of securities to affect materially the control of Golden Star is, or within the ten years prior to the date hereof has been, a director or executive officer of any company (including Golden Star) that, while that person was acting in that capacity: (i) was the subject of a cease trade or similar order or an order that denied the relevant company access to any exemption under securities legislation, for a period of more than 30 consecutive days; (ii) was subject to an event that resulted, after the director or executive officer ceased to be a director or executive officer, in the company being the subject of a cease trade or similar order or an order that denied the relevant company access to any exemption under securities legislation for a period of more than 30 consecutive days; or (iii) within a year of that person ceasing to act in that capacity, became bankrupt, made a proposal under any legislation relating to bankruptcy or insolvency or was subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets.

Ms. Dhir, a director of the Company, served as a director of Great Basin Gold Ltd. ("**Great Basin**") in 2011, a publicly listed mining company. Prior to Ms. Dhir becoming a director of Great Basin, Great Basin had issued certain loans and debentures which ultimately caused its insolvency in 2012 (disclosed under Great Basin's profile at www.sedar.com). Ms. Dhir resigned in mid-2013 after Great Basin and certain affiliates had sought creditor protection in connection with these loans and debentures.

Mr. Clausen, a director of the Company, served as a director of Jaguar Mining Inc. ("**Jaguar**") from September 2005 to June 2013, a publicly listed mining company. On December 23, 2013, approximately nine months after Mr. Clausen notified the board of directors of Jaguar that he would not stand for re-election at its annual shareholders' meeting in June 2013, Jaguar commenced

proceedings under the *Companies' Creditors Arrangement Act* (Canada) in respect of a restructuring of its debt (the “**CCAA Proceedings**”). In December 2014, the Ontario Superior Court of Justice ordered that the CCAA Proceedings be terminated.

Mr. Nasr, a director of the Company, served as a director of Weather Finance III S.à r.l. (“**Weather III**”) from November 2009 to July 2010, a privately held company. On December 14, 2010, approximately five months after Mr. Nasr had resigned as a director of Weather III, Weather III entered an administration process under English law. Mr. Nasr also served as a director of WIND Hellas Telecommunications S.A. (“**WIND Hellas**”) from February 2009 to December 16, 2010, a privately held company. On June 30, 2010, WIND Hellas was a party to a standstill agreement with its senior bank and senior bondholder creditors which included a deferral of an interest payment owing to senior bondholders. WIND Hellas was successfully restructured on December 16, 2010 to the satisfaction of its creditors. Mr. Nasr also served as a director of Hellas Telecommunications S.a.r.l. (“**Hellas**”), the general partner of Hellas Telecommunications II S.C.A. (“**Hellas II**”), from May 2007 to January 2011. Hellas II filed for administration under English law in November 2009.

CONFLICT OF INTEREST

To the best of Golden Star’s knowledge, and other than as disclosed in this Annual Information Form, in the notes to Golden Star’s financial statements and in management’s discussion and analysis of financial condition and results of operations (“**MD&A**”), there are no known existing or potential conflicts of interest between Golden Star and any director or officer of Golden Star. Certain of the directors and officers of Golden Star serve as directors and officers of other public companies and therefore it is possible that a conflict may arise between their duties as a director or officer of Golden Star and their duties as a director or officer of such other companies.

The directors and officers of Golden Star are aware of the existence of laws governing accountability of directors and officers for corporate opportunity and requiring disclosure by directors of conflicts of interest and Golden Star will rely upon such laws in respect of any directors’ and officers’ conflicts of interest or in respect of any breaches of duty by any of its directors or officers. All such conflicts will be disclosed by such directors or officers in accordance with the *Canada Business Corporations Act* and they will govern themselves in respect thereof to the best of their ability in accordance with the obligations imposed upon them by law.

INTERNAL CONTROLS

As a reporting issuer in the United States, the Company must comply with the controls and reporting provisions set out in the *Sarbanes-Oxley Act of 2002*. As such, the Company has established a control matrix for each mining site (and controls at each corporate level). The Company’s internal controls include policies and procedures that pertain to the maintenance of records that accurately and fairly reflect, in reasonable detail, the transactions and dispositions of assets of the Company and that are intended to provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company’s assets that could have a material effect on the Company’s consolidated financial statements.

AUDIT COMMITTEE

AUDIT COMMITTEE CHARTER

The written charter of the Audit Committee is disclosed as Schedule “A” to this Annual Information Form.

COMPOSITION OF THE AUDIT COMMITTEE

The Audit Committee currently has three members: Mr. Robert E. Doyle, Ms. Ani Markova and Ms. Mona Quartey. All members of the Audit Committee are financially literate and independent for the purposes of National Instrument 52-110 - *Audit Committee* (“**NI-52-110**”).

RELEVANT EDUCATION AND EXPERIENCE

See “Directors and Officers - Directors” for the biography of each Audit Committee member, including the education and experience of each Audit Committee member that is relevant to the performance of responsibilities as an Audit Committee member. Each committee member maintains an understanding of the detailed responsibilities of committee membership and the Company’s business, operations and risks.

RELIANCE ON CERTAIN EXEMPTIONS

At no time since the commencement of the Company’s most recently completed financial year has the Company relied on an exemption in Section 2.4 of NI 52-110 (De Minimis Non-audit Services), Section 3.2 of NI 52-110 (Initial Public Offerings), Section 3.3(2) of NI 52-110 (Controlled Companies), Section 3.4 of NI 52-110 (Events Outside Control of Member), Section 3.5 of NI 52-110 (Death, Disability or Resignation of Audit Committee Member) or Section 3.6 of NI 52-110 (Temporary Exemption for Limited and Exceptional Circumstances), or an exemption from NI 52-110, in whole or in part, granted under Part 8 of NI 52-110 (Exemptions) or on Section 3.8 of NI 52-110 (Acquisition of Financial Literacy).

AUDIT COMMITTEE OVERSIGHT

At no time since the commencement of the Company’s most recently completed financial year was a recommendation of the Audit Committee to nominate or compensate an external auditor not adopted by the Board.

PRE-APPROVAL POLICIES AND PROCEDURES

The Audit Committee has established a policy requiring pre-approval of all permissible non-audit services performed by the independent auditors. Such services may be approved at a meeting or by unanimous written consent of the Audit Committee, or the Audit Committee may delegate to one or more of its members the pre-approval of audit services and permissible non-audit services provided that any pre-approval by such member or members shall be presented to the Audit Committee at each of its scheduled meetings.

EXTERNAL AUDITOR SERVICE FEES

The aggregate fees billed by the Company’s external auditor in the fiscal years ended December 31 of each of 2019 and 2018 are as follows:

Financial Year Ended	Audit Fees⁽¹⁾	Audit-Related Fees⁽²⁾	Tax-Related Fees⁽³⁾	All Other Fees⁽⁴⁾	Total
December 31, 2019	CAD\$959,028	CAD\$50,400	-	-	CAD\$1,009,428
December 31, 2018	CAD\$1,053,136	CAD\$36,750	-	-	CAD\$1,089,886

Notes:

- (1) Includes aggregate audit fees billed for the audit of the financial statements for the financial year indicated, including with respect to the Company’s internal control over financial reporting, quarterly review of financial statements, fees related to review of prospectus and other registration statements, and services rendered with respect to the audit of the Company’s subsidiaries pursuant to statutory financial statement requirements in Ghana.

- (2) Includes fees related to the services provided by the Company's external auditor that are reasonably related to the performance of the audit or review of financial statements.
- (3) Includes fees related to assistance in filing annual tax returns and tax planning and any other fees billed for professional services rendered by external auditor for tax compliance, tax advice, and tax planning.
- (4) Includes fees related to products and services provided by external auditor other than services reported above.

INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS

There are no material interests, direct or indirect, of any director, executive officer, or any shareholder who beneficially owns, directly or indirectly, more than 10% of the outstanding common shares or any known associate or affiliate of such persons, in any transaction during the three most recently completed financial years or during the current financial year which has materially affected or would materially affect the Company or a subsidiary of the Company.

TRANSFER AGENT AND REGISTRAR

The transfer agent and registrar for Golden Star's common shares is AST Trust Company (Canada), having its principal offices at 1066 West Hastings Street, Suite 1600, Vancouver, British Columbia, Canada V6E 3X1 and Suite 1200, 1 Toronto Street, Ontario, Canada M5C 2V6, and telephone number 1-800-387-0825.

MATERIAL CONTRACTS

The material contracts entered into by the Company within the financial year ended December 31, 2019 or before such time that are still in effect, other than in the ordinary course of business, are as follows:

- The 7% Convertible Debentures. See "Risk Factors - General Risks".
- The Stream Transaction. See "General Development of the Business - Three Year History".
- The Credit Facility. See "General Development of the Business - Three Year History".

INTEREST OF EXPERTS

The Company's independent auditors for the fiscal year 2019, PricewaterhouseCoopers LLP, Chartered Professional Accountants ("PwC"), have audited the consolidated financial statements of Golden Star for the year ended December 31, 2019. In connection with their audit, PwC has confirmed that they are independent with respect to Golden Star within the meaning of the Chartered Professional Accountants of Ontario CPA Code of Professional Conduct and Public Company Accounting Oversight Board Rule 3520 Auditor Independence.

Mr. Wasel is the QP who supervised the preparation of the property descriptions contained herein and the Company's mineral resource estimates as at December 31, 2019. Mr. Wasel is an officer of the Company and beneficially owned, directly or indirectly, less than 1% of any class of shares of the Company's outstanding shares at the time of the preparation of the mineral reserve and resource estimates and the Technical Reports.

Mr. Varvari is the QP who supervised the preparation of the Company's mineral reserve estimates as at December 31, 2019. Mr. Varvari is an officer of the Company and beneficially owned, directly or indirectly, less than 1% of any class of shares of the Company's outstanding shares at the time of the preparation of the mineral reserve and resource estimates.

The Bogoso/Prestea Technical Report was prepared by Dr. Martin Raffield (a former officer of the Company) and Mr. S. Mitchel Wasel, an officer of the Company, each of whom is a "qualified person" for the purposes of NI 43-101. Dr. Raffield and Mr. Wasel

beneficially owned, directly or indirectly, less than 1% of any class of shares of the Company's outstanding shares at the time of the preparation of the Bogoso/Prestea Technical Report.

The Wassa Technical Report was prepared by Dr. Martin Raffield (a former officer of the Company) and Mr. S. Mitchel Wasel, an officer of the Company, each of whom is a "qualified person" for the purposes of NI 43-101. Dr. Raffield and Mr. Wasel beneficially owned, directly or indirectly, less than 1% of any class of shares of the Company's outstanding shares at the time of the preparation of the Wassa Technical Report.

ADDITIONAL INFORMATION

Additional information relating to the Company can be found on SEDAR at www.sedar.com. Additional information, including directors' and officers' remuneration and indebtedness, principal holders of the Company's securities and securities authorized for issuance under equity compensation plans is contained in the management information circular of the Company filed for its most recent annual meeting of shareholders. Additional financial information is provided in the Company's audited consolidated financial statements and the MD&A for the financial year ended December 31, 2019.

SCHEDULE "A"

AUDIT COMMITTEE CHARTER

The Board of Directors (the Board) of Golden Star Resources Ltd. (Golden Star or the Company) has established an Audit Committee (the Committee) whose membership, authority and responsibilities shall be as set out in this Charter, as it may be amended from time to time by the Board.

FUNCTION

The Committee's primary functions are to (a) assist the Board in its oversight of the integrity of the Company's financial statements and financial reporting process, the Company's compliance with legal and regulatory requirements and corporate policies and controls, the selection, retention, qualifications, objectivity and independence of the independent auditor, and the performance of the Company's internal audit function; and (b) prepare the Report of the Audit Committee to be included in the Company's annual proxy statement.

MEMBERSHIP

Following each annual meeting of shareholders of Golden Star, the Board shall appoint no fewer than three directors to the Committee (the Members), all of whom shall be "independent" within the meaning of applicable rules of securities regulatory authorities and stock exchanges (the Listing Rules), and shall appoint one of the Members to chair the Committee.

Members shall serve until the next annual meeting of shareholders or until their successors are duly appointed or until such member resigns, retires or is removed from the Committee by the Board. The Board may fill any vacancy in the Committee by appointment from among the directors of the Company.

All Members shall, from and after the time of their respective appointments to the Committee, have a practical knowledge of finance and accounting and be able to read and understand financial statements that present a breadth and level of complexity of accounting issues that are generally comparable to the breadth and complexity that can reasonably be expected to be raised by Golden Star's financial statements. In addition, Members may be required to participate in continuing education if required by applicable law or the Listing Rules.

At least one of the Members shall be a financial expert as defined in the applicable SEC and NYSE rules and regulations, and at least one of the Members shall meet the financial sophistication standards under the Listing Rules.

The Committee may form and delegate authority to subcommittees when appropriate.

MEETINGS

The Committee shall meet as frequently as is necessary to carry out its responsibilities, but at least quarterly. All Committee meetings shall take place [in Canada, whenever possible, and otherwise] at such times and locations determined by the Committee.

Each meeting will include an in camera session of (a) the Committee without members of management present and (b) the Committee with the independent auditor. At least annually, the Committee shall also hold in camera sessions with each of Golden Star's Chief Financial Officer (CFO), internal auditor and controller.

The Committee is governed by the rules regarding meetings (including meetings by conference telephone or similar communications equipment), action without meetings, notice, waiver of notice, and quorum and voting requirements as are applicable to the Board. The Committee is authorized and empowered to adopt its own rules of procedure not inconsistent with (a) any provision of this Charter, (b) any provision of the constating documents or bylaws of Golden Star, or (c) applicable law and Listing Rules.

In the absence of the Committee chair for any meeting, the Members shall elect a chair from those in attendance to act as chair of that meeting.

The Corporate Secretary shall maintain minutes of all meetings and deliberations of the Committee and shall ensure that minutes of Committee meetings are recorded with clear indication of where the Committee meeting took place, the Members who were

present in person and each of their various locations. Committee minutes shall be retained at the Company's registered office in Canada.

REPORTING

Following each meeting of the Committee, the Committee shall report to the Board on the issues considered by the Committee, any recommendations being made by the Committee for approval by the Board and on any actions taken by the Committee.

RESPONSIBILITIES, DUTIES AND POWERS

The Committee's principal responsibility is one of oversight. Golden Star's management is responsible for preparing Golden Star's financial statements, and Golden Star's independent auditor is responsible for auditing and reviewing those financial statements. In carrying out these oversight responsibilities, the Committee is not providing any expert or special assurance as to Golden Star's financial statements or any professional certification as to the independent auditor's work. The designation or identification of a Member as a financial expert or financially literate does not impose on such person any duties, obligations, or liability that are greater than the duties, obligations, and liability imposed on such person as a Member of the Committee and Board in the absence of such designation or identification; and the designation or identification of a Member as a financial expert or financially literate does not affect the duties, obligations, or liability of any other Member or Board member.

Independent Auditor

The independent auditor reports to the Committee. In carrying out its responsibilities with respect to the independent auditor, the Committee shall:

1. subject to the laws of Canada as to the role of the shareholders in the appointment of independent auditors, recommend to the Board the appointment, compensation and replacement of the independent auditor;
 2. communicate to the independent auditor that it is ultimately accountable to the Board and the Committee;
 3. oversee the work of the independent auditor (including the resolution of disagreements between management and the independent auditor regarding financial reporting);
 4. review the performance of the independent auditor, including the lead partner, on an annual basis;
 5. review the plan and scope of the quarterly review and annual audit engagements with the independent auditor;
 6. consult with the independent auditor about the quality of the Company's accounting principles, internal controls and the completeness and accuracy of the Company's financial statements;
 7. obtain annual assurance from the independent auditor that they (a) have complied with Section 10A (Audit Requirements), of the Exchange Act and the rules promulgated thereunder; and (b) they know of no violation of Rule 13b2-2 (Representations and Conduct in Connection with the Preparation of Required Reports and Documents) of the Exchange Act having occurred;
 8. on an annual basis, obtain and review a report from the independent auditor regarding (a) the independent auditor's internal quality-control procedures; and (b) any material issues raised by the most recent internal quality-control review, peer review or Public Company Accounting Oversight Board review, of the independent auditor, or by any inquiry or investigation by governmental or professional authorities, within the preceding five years, with respect to any independent audit carried out by the independent auditor, and any steps taken to deal with any such issues;
 9. at least annually, evaluate the independence of the independent auditor, and any potential conflicts of interest and all relationships between the independent auditor and the Company, including obtaining and reviewing a report prepared by the independent auditor describing all relationships between the independent auditor and the Company;
 10. ensure the rotation of the lead audit partner having primary responsibility for the audit, the concurring partner responsible for reviewing the audit, and other audit partners at least every five years or such other period as may be required under applicable law;
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11. approve, or recommend to the Board for approval, all audit, audit-related and non-audit engagement fees and terms of the engagement of the independent auditor prior to the commencement of the engagement (the Committee may delegate to one or more Committee members the authority to pre-approve engagements, provided that the decision to do so is presented to the full Committee at its next scheduled meeting); and

12. set hiring policies for employees or former employees of the independent auditor in accordance with applicable laws and regulations.

Internal Auditor

The internal auditor reports to the Committee. In carrying out its responsibilities with respect to the internal auditor, the Committee shall:

1. adopt an Internal Audit Mandate which sets out the role, responsibilities and authority of the internal auditor;
2. approve the appointment, compensation and replacement of the internal auditor;
3. communicate to the internal auditor that he or she is ultimately accountable to the Board and the Committee;
4. oversee the work of the internal auditor (including the resolution of disagreements between management and the internal auditor);
5. review the performance of the internal auditor, on an annual basis;
6. consult with the internal auditor about the quality of the Company's internal controls;
7. review with management and the internal auditor, the activities, staffing, and organizational structure of the internal audit function;
8. ensure there are no unjustified restrictions or limitations placed on the internal auditor in the carrying out of his or her functions; and
9. review the effectiveness of the internal audit function, including compliance with The Institute of Internal Auditors' International Professional Practices Framework for Internal Auditing consisting of the Definition of Internal Auditing, Code of Ethics and the Standards.

Financial Reporting

The Committee plays a critical role in the review and public release of the Company's financial information. In this regard, the Committee shall:

1. review the annual and interim financial statements and related management's discussion and analysis of financial and operating results prior to recommending the same for approval by the Board and filing with securities regulatory authorities. The Committee shall, in conducting this review, discuss with management, the independent auditor and the internal auditor:

- (a) the results of the independent auditor's reviews and audit, any issues arising and management's response, including any restrictions on the scope of the independent auditor's activities or requested information and any significant disagreements with management; the Company's critical accounting policies and practices (and any proposed or actual changes), alternative accounting treatments (including any ramifications of the use of such alternative disclosures and treatments, the treatment preferred by the independent auditor, and an explanation of why the independent auditor's preferred method was not adopted), significant accounting and reporting issues and judgments; material written communications between the independent auditor and management (including management representation letters and any schedule of unadjusted differences) and significant adjustments resulting from the independent auditor's review;
 - (b) the effect of regulatory and accounting initiatives, as well as off-balance sheet structures, on the financial statements of the Company;
 - (c) whether actual results for the period varied significantly from budgeted, projected or previous results;
 - (d) any significant or unusual events or transactions that require disclosure;
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- (e) any correspondence with regulators or governmental agencies or any employee complaints which raise material issues with respect to the Company's financial statements or accounting policies;
- (f) the impact of any regulatory and accounting initiatives, as well as any off balance sheet structures, on the Company's financial statements;
- (g) the independent auditor's perception of the Company's financial and accounting personnel, records and systems, the cooperation which the independent auditor received during the course of its review or audit and the availability of records, data and other requested information and any recommendations with respect thereto;
- (h) any legal or business matters that may have a material impact on the financial statements or the Company's compliance policies; and
- (i) whether the independent auditor, the internal auditor and management are satisfied that adequate procedures are in place for the review of the Company's public disclosure of financial information, including information extracted or derived from the financial statements and assess the adequacy of such procedures;

2. review, with management, the independent auditor and the internal auditor, risks of material misstatement due to fraud, and the processes and controls implemented by the Company to manage the risks;

3. discuss with management generally the types of information (including financial information and earnings guidance) to be disclosed in earnings press releases and earnings calls, as well as to analysts and rating agencies;

4. prior to each annual news release reporting proven and probable reserves, review with the members of management reporting the Company's policies, procedures and methodology regarding the reporting of proven and probable reserves and non-reserve mineralized material;

5. receive confirmation from the Chief Executive Officer (the CEO) and CFO that reports to be filed have been prepared in accordance with the Company's disclosure controls and procedures and contain no material misrepresentations or omissions and fairly present, in all material respects, the financial condition, results of operations and cash flow as of and for the period covered by such reports; and receive confirmation from the CEO and CFO that they have concluded that the disclosure controls and procedures are effective as of the end of the period covered by the reports; and

6. prepare the Report of the Audit Committee included in the Company's annual proxy statement.

Conduct of the Annual Audit

The Committee shall oversee the annual audit and, in the course of such oversight, the Committee shall:

1. review the scope, plan and procedures to be used on the annual audit and receive confirmation from the independent auditor that no limitations have been placed on the scope or nature of their audit scope, plan or procedures;

2. meet with the independent auditor as may be necessary or appropriate in connection with the audit;

3. ascertain that the independent auditor is registered and in good standing with the Canadian Public Accounting Board and that the independent auditor satisfies all applicable Canadian independence standards; and

4. make such inquiries of management, the internal auditor and the independent auditor as it deems necessary or appropriate to satisfy itself of the efficacy of the Company's financial and internal controls and procedures and the auditing process.

Internal Control Over Financial Reporting

To ensure the integrity of the Company's internal control over financial reporting, the Committee shall:

1. review annually, evaluate and discuss with the independent auditor, management and internal auditor the adequacy and effectiveness of the Company's internal controls over financial reporting, including reviewing and discussing any significant deficiencies or significant changes in the design or operation of the Company's internal controls (including controls over interim and annual financial reporting, computerized information systems and cybersecurity), material weaknesses in internal controls

and any fraud (whether or not material), and determine whether any internal control recommendations made by independent auditor have been implemented by management;

2. review and discuss with independent auditor, management and internal auditor the Company's process with respect to risk assessment (including fraud risk), risk management and the Company's major financial risks and financial reporting exposures, all as they relate to internal controls over financial reporting, and the steps management has taken to monitor and control such risks;

3. review the Company's Code of Ethics for Directors and Officers and its Business Conduct & Code of Ethics and, in particular, the actions taken to monitor and enforce compliance; and

4. establish procedures for the receipt, retention and treatment of complaints regarding accounting, internal controls or auditing matters, and the confidential, anonymous submission by employees of concerns regarding questionable accounting or auditing matters.

Compliance and Risk Management

The Committee plays a critical role in ensuring the Company's compliance with applicable laws and policies and the management of risks facing the Company. In this regard, the Committee shall:

1. discuss with management, the independent auditor and the internal auditor the Company's policies, procedures and programs regarding compliance with established standards of corporate conduct and applicable laws and regulations;

2. evaluate whether management is setting the appropriate tone at the top by communicating the importance of internal controls, ethics and conduct codes and ensuring that all supervisory and accounting employees understand their roles and responsibilities with respect to internal controls;

3. review with management, the independent auditor and the internal auditor:

a (a) the Company's policies with respect to risk assessment and risk management;

a (b) the Company's major financial risk exposures (including risks related to the Company's financial statements, legal and regulatory compliance matters, the oversight of the independent auditor and the performance of the internal audit function);

a (c) the steps management has taken to monitor and control such exposures (including guidelines, policies and insurance); and

a (d) the processes followed for assessment of internal controls over financial reporting;

3. review and evaluate at least annually Golden Star's policies and procedures for maintaining and investing cash funds and for hedging (metals, foreign currency, etc.) as detailed in the corporate treasury policy and approve any variations from the corporate treasury policy that may be required from time to time;

4. ensure the implementation of procedures for the receipt, retention and treatment of complaints regarding accounting, internal controls or auditing matters, and the confidential, anonymous submission by employees of concerns regarding questionable accounting or auditing matters;

5. at least annually, review the reports with respect to the Company's programs for compliance with legal and regulatory requirements;

6. review and approve related-party transactions, if any, required to be disclosed and discuss with management the business rationale for the transactions and whether appropriate disclosures have been made; and

7. review the results of reviews of executive officers' expense accounts and use of corporate assets.

Financial Management

The Committee shall recommend the appointment of the CFO to the Board and will review with the CFO the qualifications of new key financial executives involved in the financial reporting process.

On an annual basis, the Committee shall (a) review the adequacy and quality of Golden Star's financial and accounting staff; (b) evaluate the performance of the internal auditor; and (c) review succession plans for the CFO, internal auditor and the controller.

Director and Officer Liability

The Committee shall review the Company's insurance program on an annual basis, including the directors' and officers' insurance and indemnities, and consider the adequacy of such coverage.

Related Party Transactions

The Committee shall review and oversee any proposed related party transaction or situation involving a director's or officer's potential or actual conflict of interest, other than routine transactions and situations arising in the ordinary course of business, and make recommendations to the Board as to whether any such transaction, contract or other arrangement should be approved or continued.

Risk Management

The Committee shall assist the Board in fulfilling its risk oversight responsibilities by, among other things, ensuring that processes are in place to enable management to identify significant financial related risks; ensuring that management establishes appropriate action plans to mitigate against such risks; and monitoring management's implementation of such action plans.

Public Disclosure

In addition to the public disclosures specifically referenced elsewhere in this Charter, the Committee shall review and approve (or recommend to the Board for approval), prior to public release, such other public disclosures containing financial information including guidance with respect to earnings per share, financial information contained in any prospectus, annual information form, annual report, management information circular, material change disclosure of a financial nature, as the Committee considers appropriate.

Access to Management & Information

The Committee will have full and free access to officers and employees of the Company and the Company's books and records. Any meetings or contacts that the Committee wishes to initiate may be arranged through the CEO or the Corporate Secretary or directly by the chair or other member of the Committee. The Committee will use its judgment to ensure that any such contact is not disruptive to the business operations of the Company.

Advisors

The Committee has the authority to retain, obtain the advice of, and terminate any consultant, external legal counsel or other advisor, to assist it in the performance of its duties. Golden Star will provide appropriate funding, as determined by the Committee, for payment of reasonable compensation to any advisor retained by the Committee. The Committee shall have sole authority to approve such consultants' fees and retention terms, and shall be directly responsible for the selection, compensation and oversight of the advisors it retains.

Investigations

The Committee shall direct and supervise the investigation into any matter brought to its attention within the scope of its duties.

Committee Evaluation

The Committee shall review, at least annually, the Committee's duties, responsibilities and performance and determine if any changes in practices of the Committee or amendments to this Charter are necessary or otherwise deemed appropriate by the Committee. This review shall include reviewing with management and the independent auditor the applicable law and the Listing Rules relating to the qualifications, activities, responsibilities and duties of audit committees and compliance therewith.

Additional Assignments

The Committee shall undertake such additional responsibilities as from time to time may be delegated to the Committee by the Board, required by Golden Star's incorporation documents or bylaws or required by applicable law or stock exchange rules.

Last Approved by the Board of Directors: February 22, 2020.

...

GOLDEN STAR

Consolidated Financial Statements

For the Years Ended December 31, 2019 and December 31, 2018

MANAGEMENT'S RESPONSIBILITY FOR FINANCIAL STATEMENTS

The accompanying consolidated financial statements of Golden Star Resources Ltd. (the "Company") and all information in this financial report are the responsibility of management. The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards as issued by the International Accounting Standards Board ("IFRS") and, where appropriate, include management's best estimates and judgments.

Management maintains a system of internal control designed to provide reasonable assurance that assets are safeguarded from loss or unauthorized use, and that financial information is timely and reliable. However, any system of internal control over financial reporting, no matter how well designed and implemented, has inherent limitations and may not prevent or detect all misstatements.

The Board of Directors is responsible for ensuring that management fulfills its responsibilities for financial reporting and is ultimately responsible for reviewing and approving the consolidated financial statements.

The Board carries out this responsibility principally through its Audit Committee. The Board of Directors appoints the Audit Committee, and all of its members are independent directors. The Audit Committee meets periodically with management and the auditors to review internal controls, audit results, accounting principles and related matters. The Board of Directors approves the consolidated financial statements on recommendation from the Audit Committee.

PricewaterhouseCoopers LLP, an independent firm of Chartered Professional Accountants, was appointed by the shareholders at the last annual meeting to examine the consolidated financial statements and provide an independent professional opinion. PricewaterhouseCoopers LLP has full and free access to the Audit Committee.

"Andrew Wray"

Andrew Wray

President and Chief Executive Officer

"André van Niekerk"

André van Niekerk

Executive Vice President and Chief Financial Officer

Toronto, Canada

February 18, 2020

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Golden Star Resources Ltd.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Golden Star Resources Ltd. and its subsidiaries (together, the Company) as of December 31, 2019 and 2018, and the related consolidated statements of operations and comprehensive loss, cash flows and changes in shareholders' equity for the years then ended, including the related notes (collectively referred to as the consolidated financial statements). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and its financial performance and its cash flows for the years then ended in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework* (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control Over Financial Reporting on page 27 of the 2019 Management's Discussion and Analysis. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's 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. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail,

accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

(Signed) "PricewaterhouseCoopers LLP"

Chartered Professional Accountants, Licensed Public Accountants

Toronto, Canada

February 18, 2020

We have served as the Company's auditor since at least 1992. We have not been able to determine the specific year we began serving as auditor of the Company.

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GOLDEN STAR RESOURCES LTD.
CONSOLIDATED STATEMENTS OF OPERATIONS
AND COMPREHENSIVE LOSS
(Stated in thousands of U.S. dollars except shares and per share data)

	Notes	For the Years Ended December 31,	
		2019	2018
Revenue	17	\$ 264,737	\$ 273,017
Cost of sales excluding depreciation and amortization	18	186,340	223,729
Depreciation and amortization		29,054	33,939
Mine operating margin		49,343	15,349
Other expenses/(income)			
Exploration expense		3,195	2,959
General and administrative		19,091	16,428
Finance expense, net	20	7,623	18,072
Other expense/(income)	21	11,565	(3,603)
Impairment charges	19	56,762	—
Loss/(gain) on fair value of financial instruments, net	5	1,642	(6,786)
Loss before tax		(50,535)	(11,721)
Income tax expense	8	27,439	12,350
Net loss and comprehensive loss		\$ (77,974)	\$ (24,071)
Net loss attributable to non-controlling interest		(10,540)	(5,948)
Net loss attributable to Golden Star shareholders		\$ (67,434)	\$ (18,123)
Net loss per share attributable to Golden Star shareholders			
Basic	16	\$ (0.62)	\$ (0.21)
Diluted	16	\$ (0.62)	\$ (0.21)
Weighted average shares outstanding-basic (millions)		109.0	84.3
Weighted average shares outstanding-diluted (millions)		109.0	84.3

The accompanying notes are an integral part of the consolidated financial statements.

GOLDEN STAR RESOURCES LTD.
CONSOLIDATED BALANCE SHEETS
(Stated in thousands of U.S. dollars)

	Notes	As of December 31, 2019	As of December 31, 2018
ASSETS			
CURRENT ASSETS			
Cash and cash equivalents		\$ 53,367	\$ 96,507
Accounts receivable		6,503	3,213
Inventories	6	38,860	35,196
Prepays and other		8,559	5,291
Total Current Assets		<u>107,289</u>	<u>140,207</u>
RESTRICTED CASH		2,082	6,545
MINING INTERESTS	7	264,689	270,640
DEFERRED TAX ASSETS		—	595
Total Assets		<u>\$ 374,060</u>	<u>\$ 417,987</u>
LIABILITIES			
CURRENT LIABILITIES			
Accounts payable and accrued liabilities	9	\$ 90,842	\$ 78,484
Current portion of rehabilitation provisions	10	5,826	7,665
Current portion of deferred revenue	11	11,191	14,316
Current portion of long term debt	12	15,987	27,482
Other liability	15	—	6,410
Total Current Liabilities		<u>123,846</u>	<u>134,357</u>
REHABILITATION PROVISIONS	10	62,609	58,560
DEFERRED REVENUE	11	102,784	105,632
LONG TERM DEBT	12	90,782	73,224
DERIVATIVE LIABILITY	5	5,608	4,177
DEFERRED TAX LIABILITY	8	20,554	—
Total Liabilities		<u>406,183</u>	<u>375,950</u>
SHAREHOLDERS' EQUITY			
SHARE CAPITAL			
First preferred shares, without par value, unlimited shares authorized. No shares issued and outstanding		—	—
Common shares, without par value, unlimited shares authorized	13	910,205	908,035
CONTRIBUTED SURPLUS		38,964	37,258
DEFICIT		(898,779)	(831,283)
Shareholders' equity attributable to Golden Star shareholders		<u>50,390</u>	<u>114,010</u>
NON-CONTROLLING INTEREST		(82,513)	(71,973)
Total Equity		<u>(32,123)</u>	<u>42,037</u>
Total Liabilities and Shareholders' Equity		<u>\$ 374,060</u>	<u>\$ 417,987</u>

The accompanying notes are an integral part of the consolidated financial statements.

Signed on behalf of the Board,

"Timothy C. Baker"
Timothy C. Baker, Director

"Robert E. Doyle"
Robert E. Doyle, Director

GOLDEN STAR RESOURCES LTD.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Stated in thousands of U.S. dollars)

	Notes	For the Years Ended December 31,	
		2019	2018
OPERATING ACTIVITIES:			
Net loss		\$ (77,974)	\$ (24,071)
Reconciliation of net loss to net cash provided by/(used in) operating activities:			
Depreciation and amortization		29,608	33,975
Impairment charges	19	56,762	—
Share-based compensation	15	3,119	1,278
Income tax expense	8	27,439	12,350
Loss/(gain) on fair value of 7% Convertible Debentures embedded derivative	5	1,431	(6,786)
Recognition of deferred revenue	11	(13,334)	(13,738)
Reclamation expenditures	10	(3,171)	(5,316)
Other	25	12,949	11,925
Changes in working capital	25	(13,988)	(17,172)
Net cash provided by/(used in) operating activities		22,841	(7,555)
INVESTING ACTIVITIES:			
Additions to mining interests		(73,381)	(44,935)
Proceeds from asset disposal		—	38
Change in accounts payable and deposits on mine equipment and material		1,507	(3,014)
Decrease/(increase) in restricted cash		4,463	(40)
Net cash used in investing activities		(67,411)	(47,951)
FINANCING ACTIVITIES:			
Principal payments on debt	12	(57,225)	(15,607)
Proceeds from debt agreements, net	12	57,386	35,000
Royal Gold loan repayment		—	(20,000)
Shares issued, net		—	124,772
Exercise of options		1,269	61
Net cash provided by financing activities		1,430	124,226
(Decrease)/increase in cash and cash equivalents		(43,140)	68,720
Cash and cash equivalents, beginning of period		96,507	27,787
Cash and cash equivalents, end of period		\$ 53,367	\$ 96,507

See Note 21 for supplemental cash flow information.

The accompanying notes are an integral part of the consolidated financial statements.

GOLDEN STAR RESOURCES LTD.
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
(Stated in thousands of U.S. dollars except share data)

	Number of Common Shares	Share Capital	Contributed Surplus	Deficit	Non-Controlling Interest	Total Shareholders' Equity
Balance at December 31, 2017	76,116,215	\$ 783,167	\$ 35,284	\$ (794,180)	\$ (66,025)	\$ (41,754)
Impact of adopting IFRS 15 on January 1, 2018	—	—	—	(18,980)	—	(18,980)
Balance at January 1, 2018 (restated)	76,116,215	783,167	35,284	(813,160)	(66,025)	(60,734)
Shares issued	32,642,100	125,672	—	—	—	125,672
Shares issued under DSUs	36,194	20	(165)	—	—	(145)
Shares issued under options	24,500	77	(16)	—	—	61
Options granted net of forfeitures	—	—	1,248	—	—	1,248
Deferred share units granted	—	—	565	—	—	565
Performance and restricted share units granted	—	—	342	—	—	342
Share issue costs	—	(901)	—	—	—	(901)
Net loss	—	—	—	(18,123)	(5,948)	(24,071)
Balance at December 31, 2018	108,819,009	\$ 908,035	\$ 37,258	\$ (831,283)	\$ (71,973)	\$ 42,037
Impact of adopting IFRS 16 on January 1, 2019 (see Note 3)	—	—	—	(62)	—	(62)
Balance at January 1, 2019 (restated)	108,819,009	908,035	37,258	(831,345)	(71,973)	41,975
Shares issued under options	437,772	2,054	(784)	—	—	1,270
Options granted net of forfeitures	—	—	1,890	—	—	1,890
Deferred share units granted	—	—	689	—	—	689
Performance and restricted share units granted	—	—	592	—	—	592
PRSU settlement, net of tax	128,282	116	(681)	—	—	(565)
Net loss	—	—	—	(67,434)	(10,540)	(77,974)
Balance at December 31, 2019	109,385,063	\$ 910,205	\$ 38,964	\$ (898,779)	\$ (82,513)	\$ (32,123)

The accompanying notes are an integral part of the consolidated financial statements.

GOLDEN STAR RESOURCES LTD.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS FOR THE YEARS ENDED DECEMBER 31, 2019 AND 2018

(All currency amounts in tables are in thousands of U.S. dollars unless noted otherwise)

1. NATURE OF OPERATIONS

Golden Star Resources Ltd. ("Golden Star" or "the Company" or "we" or "our") is an international gold mining and exploration company incorporated under the *Canada Business Corporations Act* and headquartered in Toronto, Canada. The Company's shares are listed on the Toronto Stock Exchange under the symbol GSC, the NYSE American (formerly NYSE MKT) under the symbol GSS and the Ghana Stock Exchange under the symbol GSR. The Company's registered office is located at 150 King Street West, Suite 1200, Toronto, Ontario, M5H 1J9, Canada.

Through our 90% owned subsidiary, Golden Star (Wassa) Limited, we own and operate the Wassa open-pit gold mine, the Wassa underground mine and a carbon-in-leach processing plant (collectively, "Wassa"), located northeast of the town of Tarkwa, Ghana. Through our 90% owned subsidiary Golden Star (Bogoso/Prestea) Limited, we own and operate the Bogoso gold mining and processing operations, the Prestea open-pit mining operations and the Prestea underground mine (collectively "Prestea") located near the town of Prestea, Ghana. We also hold and manage interests in several gold exploration projects in Ghana and in Brazil.

2. BASIS OF PRESENTATION

Statement of compliance

The consolidated financial statements have been prepared in accordance with International Financial Reporting Standards ("IFRS"), as issued by the International Accounting Standards Board ("IASB") and with interpretations of the International Financial Reporting Interpretations Committee ("IFRIC") which the Canadian Accounting Standards Board has approved for incorporation into Part 1 of the CPA Canada Handbook – Accounting.

These consolidated financial statements were approved by the Board of Directors of the Company on February 18, 2020.

Basis of presentation

These consolidated financial statements include the accounts of the Company and its subsidiaries, whether owned directly or indirectly. The financial statements of the subsidiaries are prepared for the same period as the Company using consistent accounting policies for all periods presented, except for the changes in accounting policies described in Note 3 below. All inter-company balances and transactions have been eliminated. Subsidiaries are entities controlled by the Company. Non-controlling interests in the net assets of consolidated subsidiaries are a separate component of the Company's equity.

These consolidated financial statements have been prepared on a going concern basis, which contemplates the realization of assets and discharge of all liabilities in the normal course of business.

The consolidated financial statements have been prepared on a historical cost basis, except for derivative financial instruments which are measured at fair value through profit or loss.

3. SUMMARY OF ACCOUNTING POLICIES

Cash and cash equivalents

Cash includes cash deposits in any currency residing in chequing and sweep accounts. Cash equivalents consist of money market funds and other highly liquid investments purchased with maturities of three months or less. Investments with maturities greater than three months and up to one year are classified as short-term investments, while those with maturities in excess of one year are classified as long-term investments. Cash equivalents and short-term investments are stated at amortized cost, which typically approximates market value.

Inventories

Inventory classifications include "stockpiled ore," "in-process inventory," "finished goods inventory" and "materials and supplies". The stated value of all production inventories include direct production costs and attributable overhead and depreciation incurred to bring the materials to their current point in the processing cycle. General and administrative costs for corporate offices are not included in any inventories.

Stockpiled ore represents coarse ore that has been extracted from the mine and is stored for future processing. Stockpiled ore is measured by estimating the number of tonnes (via truck counts or by physical surveys) added to, or removed from the stockpile,

the number of contained ounces (based on assay data) and estimated gold recovery percentage. Stockpiled ore value is based on the costs incurred (including depreciation and amortization) in bringing the ore to the stockpile. Costs are added to the stockpiled ore based on current mining costs per tonne and are removed at the average cost per tonne of ore in the stockpile.

In-process inventory represents material that is currently being treated in the processing plants to extract the contained gold and to transform it into a saleable product. The amount of gold in the in-process inventory is determined by assay and by measure of the quantities of the various gold-bearing materials in the recovery process. The in-process gold is valued at the average of the beginning inventory and the cost of material fed into the processing stream plus in-process conversion costs including applicable mine-site overheads, depreciation and amortization related to the processing facilities.

Finished goods inventory is saleable gold in the form of doré bars. Included in the costs are the direct costs of the mining and processing operations as well as direct mine-site overheads, amortization and depreciation.

Materials and supplies inventories consist mostly of equipment parts and other consumables required in the mining and ore processing activities.

All inventories are valued at the lower of average cost or net realizable value.

Property, plant and equipment

Property, plant and equipment assets, including machinery, processing equipment, mining equipment, mine site facilities, buildings, vehicles and expenditures that extend the life of such assets, are initially recorded at cost including acquisition and installation costs. Property, plant and equipment are subsequently measured at cost, less accumulated depreciation and accumulated impairment losses.

The costs of self-constructed assets include direct construction costs and direct overhead during the construction phase. Indirect overhead costs are not included in the cost of self-constructed assets.

Depreciation for mobile equipment and other assets having estimated lives shorter than the estimated life of the ore reserves is calculated using the straight-line method at rates which depreciate the cost of the assets, less their anticipated residual values, if any, over their estimated useful lives. Mobile mining equipment is amortized over a five year life. Assets, such as processing plants, power generators and buildings, which have an estimated life equal to or greater than the estimated life of the ore reserves, are amortized over the life of the proven and probable reserves of the associated mining property using a units-of-production amortization method, less their anticipated residual values, if any. The net book value of property, plant and equipment assets is charged against income if the mine site is abandoned and it is determined that the assets cannot be economically transferred to another project or sold.

The residual values, useful lives and method of depreciation of property, plant and equipment are reviewed at each reporting period end, and adjusted prospectively if appropriate.

Gains and losses on the disposal of an item of property, plant and equipment are determined by comparing the proceeds from disposal with the carrying amount, and are recognized net in the consolidated statement of operations.

Mining properties

Mining property assets, including property acquisition costs, tailings storage facilities, mine-site development and drilling costs where proven and probable reserves have previously been established, pre-production waste stripping, condemnation drilling, roads, feasibility studies and wells are recorded at cost. The costs of self-constructed assets include direct construction costs, direct overhead costs and allocated interest during the construction phase. Indirect overhead costs are not included in the cost of self-constructed assets.

Mining property assets are amortized over the life of the proven and probable reserves to which they relate, using a units-of-production amortization method. At open pit mines the costs of removing overburden from an ore body in order to expose ore during its initial development period are capitalized.

Underground mine development costs

Underground mine development costs include development costs to build new shafts, drifts and ramps that will enable the Company to physically access ore underground. The time over which the Company will continue to incur these costs depends on the mine life. These underground development costs are capitalized as incurred. Capitalized underground development costs incurred to enable access to specific ore blocks or areas of the underground mine, and which only provide an economic benefit over the period of mining that ore block or area, are depreciated on a units-of-production basis, whereby the denominator is estimated ounces of gold in proven and probable reserves and the portion of resources within that ore block or area that is considered probable of economic extraction. If capitalized underground development costs provide an economic benefit over the entire mine life, the costs are depreciated on a units-of-production basis, whereby the denominator is the estimated ounces of gold in total accessible proven and probable reserves and the portion of resources that is considered probable of economic extraction.

Borrowing costs

Borrowing costs attributable to the acquisition, construction or production of a qualifying asset are capitalized. Qualifying assets are assets that require a significant amount of time to prepare for their intended use, including projects that are in the exploration and evaluation, development or construction stages. Capitalized borrowing costs are considered an element of the cost of the qualifying asset which is determined based on gross expenditures incurred on an asset. Capitalization ceases when the asset is substantially complete or if active development is suspended or ceases. Where the funds used to finance a qualifying asset form part of general borrowings, the amount capitalized is calculated using a weighted average of rates applicable to the relevant borrowings during the period. Where funds borrowed are directly attributable to a qualifying asset, the amount capitalized represents the borrowing costs specific to those borrowings. Other borrowing costs are recognized as an expense in the period in which they are incurred.

Impairment of long-lived assets

The Company assesses at each reporting period whether there is an indication that an asset or group of assets may be impaired. When impairment indicators exist, the Company estimates the recoverable amount of the asset and compares it against the asset's carrying amount. The recoverable amount is the higher of its fair value less cost of disposal ("FVLCD") and the asset's value in use ("VIU"). If the carrying amount exceeds the recoverable amount, an impairment loss is recorded in the consolidated statement of operations.

In assessing VIU, the estimated future cash flows are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset not already reflected in the estimates of future cash flows. The cash flows are based on best estimates of expected future cash flows from the continued use of the asset and its eventual disposal.

FVLCD is best evidenced if obtained from an active market or binding sale agreement. Where neither exists, the fair value is based on the best estimates available to reflect the amount that could be received from an arm's length transaction.

Future cash flows are based on estimated quantities of gold and other recoverable metals, expected price of gold (considering current and historical prices, price trends and related factors), production levels and cash costs of production, capital and reclamation costs, all based on detailed engineered life-of-mine plans.

Numerous factors including, but not limited to, unexpected grade changes, gold recovery variances, shortages of equipment and consumables, and equipment failures could impact our ability to achieve forecasted production schedules from proven and probable reserves. Additionally, commodity prices, capital expenditure requirements and reclamation costs could differ from the assumptions used in the cash flow models used to assess impairment. The ability to achieve the estimated quantities of recoverable minerals from exploration stage mineral interests involves further risks in addition to those factors applicable to mineral interests where proven and probable reserves have been identified, due to the lower level of confidence that the identified mineralized material can ultimately be mined economically.

If an impairment loss reverses in a subsequent period, the carrying amount (post reversal) of the related asset is increased to the revised estimate of recoverable amount to the extent that the increased carrying amount does not exceed the carrying amount that would have been determined had no impairment loss been recognized for the asset previously. Reversals of impairment losses are recognized in the statement of operations in the period the reversals occur.

Material changes to any of the factors or assumptions discussed above could result in future asset impairments.

Rehabilitation provisions

The Company records a liability and corresponding asset for the present value of the estimated costs of legal and constructive obligations for future site reclamation and closure where the liability is probable and a reasonable estimate can be made of the obligation. The estimated present value of the obligation is reassessed on a periodic basis or when new material information becomes available. Increases or decreases to the obligation usually arise due to changes in legal or regulatory requirements, the extent of environmental remediation required, methods of reclamation, cost estimates, inflation rates, or discount rates. Changes to the provision for reclamation and remediation obligations related to operating mines, which are not the result of current production of inventory, are recorded with an offsetting change to the related asset. Changes to the provision for reclamation and remediation obligations related to suspended mine operations are recognized in the consolidated statements of operations and comprehensive loss. The present value is determined based on current market assessments of the time value of money using discount rates based on the risk-free rate maturing approximating the timing of expected expenditures to be incurred, and adjusted for country related risks. The periodic unwinding of the discount is recognized in the consolidated statement of operations as a finance expense.

Deferred revenue

From January 1, 2018, deferred revenue consists of: 1) initial cash payments received by the Company for future delivery of payable gold under the terms of the Company's Streaming Agreement as defined in Note 11, Deferred Revenue, and 2) a significant

financing component of the Company's Streaming Agreement. Deferred revenue is increased as interest expense is recognized based on the implicit interest rate of the discounted cash flows arising from the expected delivery of ounces under the Company's Streaming Agreement.

The amount by which the deferred revenue balance is reduced and recognized into revenue is based on a rate per ounce of gold delivered under the stream. This rate per ounce of gold delivered relating to the payments received by the Company is based on the remaining deferred revenue balance divided by the ounces that are expected to be delivered over the term of the Stream Agreement.

As the Company's Streaming Agreement contains a variable component, IFRS 15 requires that the transaction price be updated and re-allocated on an ongoing basis. As a result, the deferred revenue recognized per ounce of gold delivered under the Streaming Agreement will require an adjustment each time there is a significant change in the underlying gold production profile of a mine. Should a change in the transaction price be necessary, a cumulative catch-up adjustment to revenue will be made in the period in which the change occurs, to reflect the updated production profile expected to be delivered under the Streaming Agreement.

Foreign currency transactions

The Company's presentation currency of its consolidated financial statements is the U.S. dollar, as is the functional currency of its operations. The functional currency of all consolidated subsidiaries is the U.S. dollar. All values are rounded to the nearest thousand, unless otherwise stated.

Monetary assets and liabilities denominated in foreign currencies are translated into U.S. dollars at period end exchange rates. Non-monetary assets and liabilities denominated in foreign currencies that are measured at fair value are translated into U.S. dollars at the exchange rate at the date that the fair value was determined. Income and expense items are translated at the exchange rate in effect on the date of the transaction. Exchange gains and losses resulting from the translation of these amounts are included in net loss, except those arising on the translation of equity investments at fair value through other comprehensive income that are recorded in other comprehensive income. Non-monetary assets and liabilities denominated in foreign currencies that are measured at historical cost are translated at the exchange rate in effect at the transaction date.

Income taxes

Income taxes comprise the provision for (or recovery of) taxes actually paid or payable (current taxes) and for deferred taxes.

Current taxes are based on taxable earnings in the year. Current tax is calculated using tax rates and laws that were enacted or substantively enacted at the balance sheet date in the respective jurisdictions.

Current income tax assets and current income tax liabilities are only offset if a legally enforceable right exists to offset the amounts and the Company intends to settle on a net basis or to realize the asset and settle the liability simultaneously.

Deferred income tax assets and liabilities are recognized for the expected future tax consequences attributable to temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements. Deferred income tax assets and liabilities are computed using enacted or substantially enacted income tax rates in effect when the temporary differences are expected to reverse. The effect on the deferred tax assets and liabilities of a change in tax rates is recognized in the period of substantial enactment. The provision for or the recovery of deferred taxes is based on the changes in deferred tax assets and liabilities during the period.

The carrying amount of deferred income tax assets or liabilities are reviewed at the end of each reporting period and recognized to the extent that it is probable that taxable earnings will be available against which deductible temporary differences can be utilized.

Net income/(loss) per share

Basic income/(loss) per share of common stock is calculated by dividing income available to Golden Star's common shareholders by the weighted average number of common shares issued and outstanding during the period. In periods with earnings, the calculation of diluted net income per common share uses the treasury stock method to compute the dilutive effects of stock options, convertible debentures and other potentially dilutive instruments. In periods of loss, diluted net loss per share is equal to basic loss per share.

Revenue recognition

Revenue from the sale of metal is recognized when the Company transfers control over to a customer. All of our spot sales of gold are transported to a South African gold refiner who locates a buyer and arranges for sale of our gold on the same day that the gold is shipped from the mine site. The sales price is based on the London P.M. fix on the day of shipment.

Revenue recognition for the Company's Streaming Agreement is disclosed in the accounting policy for deferred revenue.

Share-based compensation

Under the Company's Fourth Amended and Restated 1997 Stock Option Plan, common share options may be granted to executives, employees, consultants and non-employee directors. Compensation expense for such grants is recorded in the consolidated statements of operations and comprehensive loss, with a corresponding increase recorded in the contributed surplus account in the consolidated balance sheet. The expense is based on the fair value of the option at the time of grant, measured by reference to the fair value determined using a Black-Scholes valuation model, and is recognized over the vesting periods of the respective options on a graded basis. Consideration paid to the Company on exercise of options is credited to share capital.

Under the Company's Deferred Share Unit ("DSU") plan, DSUs may be granted to executive officers and directors. Compensation expense for such grants is recorded in the consolidated statements of operations and comprehensive loss with a corresponding increase recorded in the contributed surplus account in the consolidated balance sheets. The expense is based on the fair values at the time of grant and is recognized over the vesting periods of the respective DSUs. Upon exercise the Company's compensation committee may, at its discretion, issue cash, shares or a combination thereof.

Under the Company's Share Appreciation Rights ("SARs") plan allows SARs to be issued to executives, employees and directors. These awards are settled in cash on the exercise date equal to the Company's stock price less the strike price. Since these awards are settled in cash, the Company marks-to-market the associated expense for each award at the end of each reporting period using a Black-Scholes model. The Company accounts for these as liability awards and marks-to-market the fair value of the award until final settlement.

Under the Company's Performance Share Units ("PSU") plan, PSUs may be granted to executives, employees and non-employee directors. Each PSU represents one notional common share that is redeemed for cash based on the value of a common share at the end of the three year performance period, to the extent performance and vesting criteria have been met. The PSUs vest at the end of a three year performance. The cash award is determined by multiplying the number of units by the performance adjusting factor, which ranges from 0% to 200%. The performance factor is determined by comparing the Company's share price performance to the share price performance of a peer group of companies as listed in the PSU plan. As the Company was required to settle these awards in cash, they were accounted for as liability awards with corresponding compensation expense recognized. The final PSU grant vested on December 31, 2018 and as a result the Company did not recognize a PSU expense in 2019.

Under the Company's 2017 performance and restricted share unit plan (the "2017 PRSU Plan"), performance share units ("2017 PSUs") and restricted share units ("2017 RSUs" and, together with the 2017 PSUs, the "Share Units") may be issued to any employee or officer of the Company or its designated affiliates. Share Units may be redeemed for: (i) common shares issued from treasury; (ii) common shares purchased in the secondary market; (iii) a cash payment; or (iv) a combination of (i), (ii) and (iii).

Each PRSU represents one notional common share that is redeemed for common shares or common shares plus cash subject to the consent of the Company based on the value of a common share at the end of the three year performance period, to the extent performance and vesting criteria have been met. The PRSUs vest at the end of a three year performance period. The award is determined by multiplying the number of Share Units by the performance adjustment factor, which ranges from 0% to 200%. The performance adjustment factor is determined by comparing the Company's share price performance to the share price performance of a peer group of companies as listed in the 2017 PRSU Plan. As the Company has a practice of settling these awards in common shares, they are accounted for as equity awards with corresponding compensation expense recognized.

Right of Use Asset and Lease Liabilities

Until December 31, 2018 leases that transfer substantially all of the benefits and risks of ownership to the Company were recorded as finance leases and classified as property, plant and equipment with a corresponding amount recorded with current and long-term debt. All other leases were classified as operating leases under which leasing costs were expensed in the period incurred.

On January 1, 2019, the Company adopted the requirements of IFRS 16 *Leases*. As a result, the Company updated its accounting policy for leases to align with the requirements of IFRS 16. The Company elected to use the modified retrospective approach to initially adopt IFRS 16 which resulted in recognizing the cumulative effect of prior period amounts as an adjustment to the opening balance sheet through opening deficit on January 1, 2019.

From January 1, 2019, the Company recognizes a lease liability and a right-of-use asset at the lease commencement date.

The lease liability is initially measured as the present value of future lease payments discounted using the interest rate implicit in the lease or, if that rate cannot be readily determined, each operation's applicable incremental borrowing rate. The incremental borrowing rate is the rate which the operation would have to pay to borrow, over a similar term and with a similar security, the funds necessary to obtain an asset of similar value to the right-of-use asset in a similar economic environment.

Lease payments included in the measurement of the lease liability comprise the following: fixed payments, including in-substance fixed payments, less any lease incentives receivable, variable lease payments that depend on an index or a rate, initially measured using the index or rate as at the commencement date, amounts expected to be payable by the Company under residual value

guarantees, the exercise price of a purchase option if the Company is reasonably certain to exercise that option, and payments of penalties for terminating the lease, if the Company expects to exercise an option to terminate the lease.

The lease liability is subsequently measured by increasing the carrying amount to reflect interest on the lease liability, reducing the carrying amount to reflect lease payments made, and remeasuring the carrying amount to reflect any reassessment or lease modifications.

The lease liability is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the Company's estimate of the amount expected to be payable under a residual value guarantee, or if the Company changes its assessment of whether it will exercise a purchase, extension or termination option.

The right-of-use asset is initially measured at cost, which comprises the following: the amount of the initial measurement of the lease liability, any lease payments made at or before the commencement date, less any lease incentives received, any initial direct costs incurred by the Company, and an estimate of costs to be incurred by the Company in dismantling and removing the underlying asset, restoring the site on which it is located or restoring the underlying asset to the condition required by the terms and conditions of the lease, unless those costs are incurred to produce inventories.

The right-of-use asset is subsequently measured at cost, less any accumulated depreciation and any accumulated impairment losses, and adjusted for any remeasurement of the lease liability. It is depreciated in accordance with the Company's accounting policy for plant and equipment, from the commencement date to the earlier of the end of its useful life or the end of the lease term.

Each lease payment is allocated between the lease liability and finance cost. The finance cost is charged to net earnings over the lease period so as to produce a constant periodic rate of interest on the remaining balance of the liability for each period.

On the consolidated balance sheet, right-of-use assets and lease liabilities are reported in mineral properties, plant and equipment and debt and lease liabilities, respectively.

Financial instruments

The Company recognizes all financial assets initially at fair value and classifies them into one of the following measurement categories: fair value through profit or loss ("FVTPL"), fair value through other comprehensive income ("FVOCI") or amortized cost, as appropriate.

The Company recognizes all financial liabilities initially at fair value and classifies them as either FVTPL or loans and borrowings, as appropriate. The Company has not classified any of its derivatives as hedging instruments in an effective hedge.

Derivatives

From time to time the Company may utilize foreign exchange and commodity price derivatives to manage exposure to fluctuations in foreign currency exchange rates and gold prices, respectively. The Company does not employ derivative financial instruments for trading purposes or for speculative purposes. Derivative instruments are recorded on the balance sheet at fair value with changes in fair value recorded in the consolidated statement of operations. The Company did not have any foreign exchange derivatives outstanding at December 31, 2019.

7% Convertible Debentures embedded derivative

The Company's 7% Convertible Debentures embedded derivative is considered a financial instrument at FVTPL. The embedded derivative was recorded at fair value on the date of debt issuance. It is subsequently remeasured at fair value at each reporting date, and the changes in the fair value are recorded in the consolidated statement of operations. The fair value of the embedded derivative is determined using a convertible note valuation model, using assumptions based on market conditions existing at the reporting date.

Non-hedge derivative contracts

During the year ended December 31, 2019, the Company entered into costless collars consisting of puts and calls, on 50,000 ounces of gold with a floor price of \$1,400 per ounce and a ceiling price of \$1,750 per ounce with maturity dates ranging from October 2019 to September 2020. The non-hedge accounted collar contracts are considered fair value through profit or loss financial instruments with fair value determined using pricing models that utilize a variety of observable inputs that are a combination of quoted prices, applicable yield curves and credit spreads. The non-hedge derivative contracts are included with prepaids and other or accounts payable and accrued liabilities on the balance sheet.

Share capital

Common shares are classified as equity. Costs directly attributable to the issue of new shares or share options are shown in equity as a deduction, net of tax, from the gross proceeds.

Changes in accounting policies

The Company has adopted the following new and revised standards, effective January 1, 2019. These changes were made in accordance with the applicable transitional provisions.

IFRS 16 *Leases* specifies how an IFRS reporter will recognize, measure, present and disclose leases. The standard provides a single lessee accounting model, requiring lessees to recognize assets and liabilities for all leases unless the lease term is 12 months or less or the underlying asset has a low value. Lessors continue to classify leases as operating or finance, with IFRS 16's approach to lessor accounting substantially unchanged from its predecessor, IAS 17. IFRS 16 was issued in January 2016 and applies to annual reporting periods beginning on or after January 1, 2019. On adoption of this standard the Company elected to use the modified retrospective approach to initially adopt IFRS 16 which resulted in recognizing the cumulative effect of prior period amounts as an adjustment to the opening balance sheet through opening deficit on January 1, 2019. Under IFRS 16, the Company recognized lease liabilities in relation to leases which had previously been classified as "operating leases" under the principles of IAS 17 *Leases*. These liabilities were measured at the present value of the remaining lease payments, discounted using the lessee's incremental borrowing rate as of January 1, 2019. The weighted average lessee's incremental borrowing rate applied to the lease liabilities on January 1, 2019 was 7.5%. The associated right-of-use assets for property leases were measured on a retrospective basis as if the new rules had always been applied. The change in accounting policy resulted in an increase to mining interests (plant and equipment) of \$0.7 million and an increase to long term debt (finance leases) of \$0.5 million. The net impact on retained earnings on January 1, 2019 was a decrease of \$0.1 million.

IFRIC 23 *Uncertainty over income tax treatments* clarifies how the recognition and measurement requirements of IAS 12, *Income Taxes*, are applied where there is uncertainty over income tax treatments effective for years beginning on or after January 1, 2019. There was no accounting impact to the financial statements on adoption of this standard.

4. CRITICAL ACCOUNTING JUDGEMENTS, ESTIMATES AND ASSUMPTIONS

Preparation of our consolidated financial statements in conformity with IFRS requires management to make judgments, estimates and assumptions that can affect reported amounts of assets, liabilities, revenues and expenses and the accompanying disclosures. Estimates and assumptions are continuously evaluated and are based on management's historical experience and on other assumptions we believe to be reasonable under the circumstances. However, uncertainty about these judgments, estimates and assumptions could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities affected in future periods.

Mineral reserves and resources

Determining mineral reserves and resources is a complex process involving numerous variables and is based on a professional evaluation using accepted international standards for the assessment of mineral reserves. Estimation is a subjective process, and the accuracy of such estimates is a function of the quantity and quality of available data, the assumptions made and judgments used in engineering and geological interpretation. Mineral reserve estimation may vary as a result of changes in the price of gold, production costs, and with additional knowledge of the ore deposits and mining conditions.

Differences between management's assumptions including economic assumptions such as metal prices and market conditions could have a material effect in the future on the Company's results and financial position, particularly a change in the rate of depreciation and amortization of the related mining assets and the recognition of deferred revenue.

Units of production depreciation

The mineral properties and a large portion of the property, plant and equipment is depreciated/amortized using the units of production method over the expected operating life of the mine based on estimated recoverable ounces of gold, which are the prime determinants of the life of a mine. Estimated recoverable ounces of gold include proven and probable mineral reserves. Changes in the estimated mineral reserves will result in changes to the depreciation charges over the remaining life of the operation. A decrease in the mineral reserves would increase depreciation and amortization expense and this could have a material impact on the operating results. The amortization base is updated on an annual basis based on the new mineral reserve and resource estimates.

Carrying value of assets and impairment charges

The Company undertakes a review of its assets at each reporting period to determine whether any indication of impairment exists. Where an indicator of impairment exists, a formal estimate of the recoverable amount of the asset or cash-generating unit ("CGU") is made, which is considered to be the higher of its FVLCD and VIU. An impairment loss is recognized when the carrying value of the asset or CGU is higher than the recoverable amount. In undertaking this review, management of the Company is required to make significant estimates of, amongst other things, discount rates, future production and sale volumes, metal prices, reserves and resource quantities, future operating and capital costs and reclamation costs to the end of the mine's life. These estimates are subject to various risks and uncertainties, which may ultimately have an effect on the expected recoverability of the carrying values

of the asset or CGU. In determining a CGU, management has examined the smallest identifiable group of assets that generates cash inflows that are largely independent of cash inflows from other assets or group of assets.

Assessment of impairment and reverse impairment indicators

Management applies significant judgment in assessing whether indicators of impairment or reverse impairment exist for an asset or group of assets which would necessitate impairment testing. Internal and external factors such as significant changes in the use of the asset, commodity prices and production costs are used by Management in determining whether there are any indicators.

Rehabilitation provisions

Environmental reclamation and closure liabilities are recognized at the time of environmental disturbance, in amounts equal to the discounted value of expected future reclamation and closure costs. The estimated future cash costs of such liabilities are based primarily upon environmental and regulatory requirements of the various jurisdictions in which we operate as well as any other constructive obligations that exist. The liability represents management's best estimates of cash required to settle the liability, inflation, assumptions of risks associated with future cash flows and the applicable risk-free interest rates for discounting the future cash outflow. The liability is reassessed and remeasured at each reporting date.

Fair value of financial instruments, including embedded derivatives

Where the fair value of financial assets and financial liabilities recorded in the financial statements cannot be derived from active markets, their fair value is determined using valuation techniques including the discounted cash flow model. The inputs to these models are taken from observable markets where possible, but where this is not feasible, a degree of judgment is required in establishing fair values. The judgments include considerations of inputs such as liquidity risk, credit risk and volatility. Changes in assumptions about these factors could affect the reported fair value of financial instruments.

When measuring the fair value of an asset or liability, the Company uses observable market data to the greatest extent possible. Fair values are categorized into different levels in a fair value hierarchy based on the inputs used in the valuation techniques as follows:

Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities

Level 2: inputs other than quoted prices included in Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices)

Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs)

Income taxes

We deal with uncertainties and judgments in the application of complex tax regulations in the various jurisdictions where our properties are located. The amount of taxes paid is dependent upon many factors, including negotiations with taxing authorities in the various jurisdictions and resolution of disputes arising from our international tax audits. We recognize potential liabilities and record tax liabilities for anticipated tax audit issues in our various tax jurisdictions based on our best estimate of additional taxes payable. We adjust these tax estimates in light of changing facts and circumstances, however, due to the complexity of some of these uncertainties, the ultimate resolution may result in payment that is materially different from our estimates of our tax liabilities. If our estimate of tax liability proves to be less than the ultimate assessment, an additional charge to expense would result. If the estimate of tax liabilities proves to be greater than the ultimate assessment, a tax benefit is recognized.

A deferred tax asset is recognized to the extent that it is probable that taxable earnings will be available against which deductible temporary differences can be utilized.

Deferred revenue

Significant judgment is required in determining the appropriate accounting for the Streaming Agreement that has been entered into. Management has determined that based on the agreements reached that it assumes significant business risk associated with the timing and amount of ounces of gold being delivered. As such, the deposits received have been recorded as deferred revenue liabilities in the consolidated balance sheet.

The amount by which the deferred revenue balance is reduced and recognized into revenue is based on a rate per ounce of gold delivered under the stream. This rate per ounce of gold delivered relating to the payments received by the Company is based on the remaining deferred revenue balance divided by the ounces that are expected to be delivered over the term of the Stream Agreement.

As the Company's Streaming Agreement contains a variable component, IFRS 15 requires that the transaction price be updated and re-allocated on an ongoing basis. As a result, the deferred revenue recognized per ounce of gold delivered under the Streaming Agreement will require an adjustment each time there is a significant change in the underlying gold production profile of a mine.

Should a change in the transaction price be necessary, a retroactive adjustment to revenue will be made in the period in which the change occurs, to reflect the updated production profile expected to be delivered under the Streaming Agreement.

5. FINANCIAL INSTRUMENTS

The following tables illustrate the classification of the Company's recurring fair value measurements for financial instruments within the fair value hierarchy and their carrying values and fair values as at December 31, 2019 and December 31, 2018:

	Level	December 31, 2019		December 31, 2018	
		Carrying value	Fair value	Carrying value	Fair value
Financial Liabilities					
Fair value through profit or loss					
7% Convertible Debentures embedded derivative	3	5,608	5,608	4,177	4,177
Non-hedge derivative contracts	2	211	211	—	—

There were no non-recurring fair value measurements of financial instruments as at December 31, 2019.

The three levels of the fair value hierarchy are:

Level 1 - Unadjusted quoted prices in active markets for identical assets or liabilities;

Level 2 - Inputs other than quoted prices that are observable for the asset or liability either directly or indirectly; and

Level 3 - Inputs that are not based on observable market data.

The Company's policy is to recognize transfers into and transfers out of the fair value hierarchy levels as of the date of the event or change in circumstances that caused the transfer. During the year ended December 31, 2019, there were no transfers between the levels of the fair value hierarchy.

Loss/(gain) on fair value of financial instruments in the Statements of Operations and Comprehensive Loss consists of the following:

	For the Years Ended December 31,	
	2019	2018
Loss/(gain) on fair value of 7% Convertible Debentures embedded derivative	\$ 1,431	\$ (6,786)
Unrealized loss on non-hedge derivative contracts	211	—
	<u>\$ 1,642</u>	<u>\$ (6,786)</u>

The valuation technique that is used to measure fair value is as follows:

7% Convertible Debentures embedded derivative

The debt component of the 7% Convertible Debentures is recorded at amortized cost using the effective interest rate method, and the conversion feature is classified as an embedded derivative measured at fair value through profit or loss.

The embedded derivative was valued at December 31, 2019 and December 31, 2018 using a convertible note valuation model. The significant inputs used in the convertible note valuation are as follows:

	December 31, 2019	December 31, 2018
Embedded derivative		
Risk premium	5.3%	5.0%
Borrowing costs	7.5%	10.0%
Expected volatility	45.0%	45.0%
Remaining life (years)	1.6	2.6

The following table presents the changes in the 7% Convertible Debentures embedded derivative for the year ended December 31, 2019:

	Fair value
Balance at December 31, 2018	\$ 4,177
Loss on fair value of 7% Convertible Debentures embedded derivative	1,431
Balance at December 31, 2019	<u>\$ 5,608</u>

If the risk premium increases by 10%, the fair value of the 7% Convertible Debentures embedded derivative would decrease and the related loss in the Statement of Operations would decrease by \$0.1 million at December 31, 2019.

If the borrowing costs increases by 10%, the fair value of the 7% Convertible Debentures embedded derivative would decrease and the related loss in the Statement of Operations would decrease by \$0.1 million at December 31, 2019.

If the expected volatility increases by 10%, the fair value of the 7% Convertible Debentures embedded derivative would increase and the related loss in the Statement of Operations would increase by \$0.7 million at December 31, 2019.

Non-hedge derivative contracts

During the year ended December 31, 2019, the Company entered into costless collars consisting of puts and calls, on 50,000 ounces of gold with a floor price of \$1,400 per ounce and a ceiling price of \$1,750 per ounce with maturity dates ranging from October 2019 to September 2020.

The non-hedge accounted collar contracts are considered fair value through profit or loss financial instruments with fair value determined using pricing models that utilize a variety of observable inputs that are a combination of quoted prices, applicable yield curves and credit spreads. The non-hedge derivative contracts are included with accounts payable and accrued liabilities on the balance sheet.

During the year ended December 31, 2019, the Company recognized an unrealized loss of \$0.2 million on the non-hedge accounted collar contracts.

6. INVENTORIES

Inventories include the following components:

	As of December 31, 2019	As of December 31, 2018
Stockpiled ore	\$ 7,578	\$ 6,613
In-process ore	2,721	4,188
Materials and supplies	28,167	23,659
Finished goods	394	736
Total	<u>\$ 38,860</u>	<u>\$ 35,196</u>

The cost of inventories expensed for the year ended December 31, 2019 and 2018 was \$171.4 million and \$209.4 million, respectively.

Net realizable value adjustments of \$1.2 million were recorded for stockpiled ore in the year ended December 31, 2019 (year ended December 31, 2018 - \$2.8 million).

7. MINING INTERESTS

The following table shows the breakdown of the cost, accumulated depreciation and net book value of plant and equipment, mining properties and construction in progress:

	Plant and equipment	Mining properties	Construction in progress	Total
Cost				
As of December 31, 2017	479,214	798,433	126,923	1,404,570
Additions	95	677	45,485	46,257
Transfers	16,516	127,902	(144,418)	—
Capitalized interest	—	—	579	579
Change in rehabilitation provision estimate	—	3,218	—	3,218
Disposals and other	(17,065)	—	—	(17,065)
Balance at December 31, 2018	\$ 478,760	\$ 930,230	\$ 28,569	\$ 1,437,559
Additions	2,869	288	72,615	75,772
Transfers	11,586	71,337	(82,923)	—
Change in rehabilitation provision estimate	—	4,830	—	4,830
Disposals and other	(621)	—	—	(621)
Balance at December 31, 2019	\$ 492,594	\$ 1,006,685	\$ 18,261	\$ 1,517,540
Accumulated depreciation				
As of December 31, 2017	437,292	713,220	—	1,150,512
Depreciation and amortization	12,349	20,900	—	33,249
Disposals and other	(16,842)	—	—	(16,842)
Balance at December 31, 2018	\$ 432,799	\$ 734,120	\$ —	\$ 1,166,919
Depreciation and amortization	10,582	19,044	—	29,626
Disposals and other	(456)	—	—	(456)
Impairment charges (see Note 19)	7,338	49,424	—	56,762
Balance at December 31, 2019	\$ 450,263	\$ 802,588	\$ —	\$ 1,252,851
Carrying amount				
Balance at December 31, 2018	\$ 45,961	\$ 196,110	\$ 28,569	\$ 270,640
Balance at December 31, 2019	\$ 42,331	\$ 204,097	\$ 18,261	\$ 264,689

Additions to plant and equipment include right-of-use assets related to the Company's corporate office space. As at December 31, 2019, the right-of-use assets had net carrying amounts of \$3.3 million (December 31, 2018 - \$3.0 million). The total minimum lease payments are disclosed in Note 12 - Debt.

8. INCOME TAXES

We recognize deferred tax assets and liabilities based on the difference between the financial reporting and tax basis of assets and liabilities using the tax rates enacted or substantively enacted when the temporary differences are expected to reverse. Deferred tax assets are fully recognized when we conclude sufficient positive evidence exists to demonstrate that it is probable that a deferred tax asset will be realized. These factors included, but are not limited to, (a) historic and expected future levels of taxable income; (b) tax plans that affect whether tax assets can be realized; and (c) the nature, amount and expected timing of reversal of taxable temporary differences. Levels of future income are affected by market price of gold, forecasted future costs of production and quantities of proven and probable gold reserves. If these factors or other circumstances changes, the Company records an adjustment to the recognition of deferred tax asset to reflect the Company's latest assessment of the amount of deferred tax asset that is probable to be realized.

Our net deferred tax (liabilities)/assets at December 31, 2019 and 2018 include the following components:

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Deferred tax assets		
Tax losses carried forward	\$ —	\$ 10,322
Deductible temporary differences relating to provisions	4,672	5,995
Deferred tax liabilities		
Mine property costs	25,226	15,723
Net deferred tax (liabilities)/assets	<u>\$ (20,554)</u>	<u>\$ 594</u>

The composition of our unrecognized deferred tax assets by tax jurisdiction is summarized as follows:

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Deductible temporary differences		
Canada	\$ 7,006	\$ 8,844
Ghana	49,869	31,509
	<u>\$ 56,875</u>	<u>\$ 40,353</u>
Tax losses		
Canada	\$ 60,195	\$ 50,718
U.S.	138	175
Ghana	305,261	287,545
	<u>\$ 365,594</u>	<u>\$ 338,438</u>
Total unrecognized deferred tax assets		
Canada	\$ 67,201	\$ 59,562
U.S.	138	175
Ghana	355,130	319,054
	<u>\$ 422,469</u>	<u>\$ 378,791</u>

The income tax expense includes the following components:

	<u>For the years ended December 31,</u>	
	<u>2019</u>	<u>2018</u>
Current tax expense		
Current tax on net earnings	\$ 6,291	\$ —
Deferred tax expense		
Originating and reversal of temporary differences in the current year	21,148	12,350
Income tax expense	<u>\$ 27,439</u>	<u>\$ 12,350</u>

A reconciliation of expected income tax on net loss before minority interest at statutory rates with the actual income tax expense is as follows:

	For the years ended December 31,	
	2019	2018
Net loss before tax	\$ (50,534)	\$ (11,721)
Statutory tax rate	26.5%	26.5%
Tax benefit at statutory rate	\$ (13,392)	\$ (3,106)
Foreign tax rates	(21,367)	(15,562)
Other	—	132
Non taxable/deductible items	1,914	(676)
Change in unrecognized deferred tax assets due to exchange rates	(2,424)	3,427
Change in unrecognized deferred tax assets due to impairment	19,867	—
Change in unrecognized deferred tax assets	42,841	28,135
Deferred income tax expense	\$ 27,439	\$ 12,350

At December 31, 2019, the Company had a tax pool and loss carryovers expiring as follows:

	Canada	Ghana	Other
2020	\$ —	\$ 63,099	\$ —
2021	—	12,822	—
2022	—	—	—
2023	—	80,486	—
2024	—	130,324	—
2026	8,519	—	—
2027	12,918	—	—
2028	11,659	—	—
2029	17,679	—	—
2030	15,802	—	—
2031	29,646	—	—
2032	14,351	—	—
2033	6,177	—	174
2034	—	—	364
2035	8,450	—	1
2036	13,777	—	120
2037	15,565	—	—
2038	27,439	—	—
2039	24,997	—	—
Indefinite	40,347	585,443	—
Total	\$ 247,326	\$ 872,174	\$ 659

The total of \$872.2 million of the Ghana tax pool is usable against taxable income generated at Prestea.

The Ghana Revenue Authority (“GRA”) has issued a tax assessment to the company’s subsidiary (Golden Star (Wassa) Limited) related to 2014-2016. The assessment claimed a reduction in the tax losses attributable by \$29 million. The company believes that the majority of the matters noted in the assessment are incorrect and has filed an appeal in an attempt to resolve these matters. Overall, it is the company’s current assessment that the relevant assessments and claims by the GRA are without merit. No amounts have been recorded for any potential liability and the company intends to defend any follow up in relation to this matter should it arise. The amount of loss, if any, cannot be determined at the current time.

9. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

Accounts payable and accrued liabilities include the following components:

	As of December 31, 2019	As of December 31, 2018
Trade and other payables	\$ 44,494	\$ 42,947
Accrued liabilities	38,567	25,522
Payroll related liabilities	7,781	10,015
Total	\$ 90,842	\$ 78,484

10. REHABILITATION PROVISIONS

At December 31, 2019, the total undiscounted amount of future cash needs for rehabilitation was estimated to be \$73.8 million. A discount rate assumption of 2%, inflation rate assumption of 2% and a risk premium of 5% were used in both 2019 and 2018 to value the rehabilitation provisions. The changes in the carrying amount of the rehabilitation provisions are as follows:

	For the Years Ended December 31,	
	2019	2018
Beginning balance	\$ 66,225	\$ 70,712
Accretion of rehabilitation provisions	730	691
Changes in estimates	4,651	138
Cost of reclamation work performed	(3,171)	(5,316)
Balance at the end of the period	\$ 68,435	\$ 66,225
Current portion	\$ 5,826	\$ 7,665
Long term portion	62,609	58,560
Total	\$ 68,435	\$ 66,225

During the year ended December 31, 2019, the Company recorded an increase in estimate for Wassa of \$1.6 million due to a revision in the timing of payments. At December 31, 2019, the rehabilitation provision for Wassa was \$17.8 million (2018- \$17.2 million). The Company expects the payments for reclamation to be incurred between 2020 and 2027.

During the year ended December 31, 2019, the Company recorded an increase in estimate for Prestea of \$3.1 million. The increase is due to a \$3.3 million increase in the expected reclamation costs relating to the non-refractory operation, slightly offset by a \$0.2 million reduction in expected reclamation costs relating to the refractory liability. The \$0.2 million (2018 - \$3.1 million) reduction in refractory obligation was recorded as other expense/(income) since the carrying value of the underlying refractory assets were \$nil after suspension of its operation in 2015. At December 31, 2019, the rehabilitation provision for Prestea was \$50.6 million (2018 - \$49.0 million). The Company expects the payments for reclamation to be incurred between 2020 and 2029.

11. DEFERRED REVENUE

The Company through its subsidiary Caystar Finance Co. completed a \$145 million gold purchase and sale agreement ("Streaming Agreement") with RGLD Gold AG ("RGLD"), a wholly-owned subsidiary of Royal Gold, Inc. Golden Star will deliver 10.5% of gold production from Wassa and Prestea at a cash purchase price of 20% of spot gold until 240,000 ounces have been delivered. Thereafter, 5.5% of gold production will be delivered from Wassa and Prestea at a cash purchase price of 30% of spot gold price. As at December 31, 2019 the Company had delivered a total of 100,181 ounces of gold to RGLD since the inception of the Streaming Agreement.

During the year ended December 31, 2019, the Company sold 21,720 ounces of gold to RGLD. Revenue recognized on the ounces sold to RGLD during the year ended December 31, 2019 consisted of \$6.0 million of cash payment proceeds and \$13.3 million of deferred revenue recognized in the period (see Note 17).

	For the Years Ended December 31,	
	2019	2018
Beginning balance	\$ 119,948	\$ 109,956
Impact of adopting IFRS 15 on January 1, 2018	—	18,980
Deferred revenue recognized before cumulative catch-up adjustment	(13,334)	(13,738)
Variable consideration adjustment	3,073	—
Interest on financing component of deferred revenue	4,288	4,750
Balance at the end of the period	\$ 113,975	\$ 119,948
Current portion	\$ 11,191	\$ 14,316
Long term portion	102,784	105,632
Total	\$ 113,975	\$ 119,948

As the Company's Streaming Agreement contains a variable component, each time there is a significant change in the underlying gold production of the Company's mines a cumulative catch-up adjustment to revenue is required. In 2019, the Company realized an adjustment to revenue and finance costs due to an increase in the Company's resource and reserve estimates related primarily to the Wassa mine. The result of the adjustment was to reduce revenue by \$(9.3) million, reduce finance expense by \$(6.2) million and increase deferred revenue by \$3.1 million.

12. DEBT

The following table displays the components of our current and long term debt instruments:

	As of December 31, 2019	As of December 31, 2018
Current debt:		
Lease liabilities	\$ 987	\$ 1,151
Ecobank Loan III	—	5,555
Ecobank Loan IV	—	4,000
Vendor agreement	—	16,776
Macquarie Credit Facility	15,000	—
Total current debt	\$ 15,987	\$ 27,482
Long term debt:		
Leases liabilities	\$ 1,394	\$ 532
Ecobank Loan III	—	14,380
Ecobank Loan IV	—	13,700
7% Convertible Debentures	47,002	44,612
Macquarie Credit Facility	42,386	—
Total long term debt	\$ 90,782	\$ 73,224
Current portion	\$ 15,987	\$ 27,482
Long term portion	90,782	73,224
Total	\$ 106,769	\$ 100,706

Macquarie Credit Facility

On October 17, 2019, the Company closed a \$60 million senior secured credit facility with Macquarie Bank Limited (the "Credit Facility"). The Credit Facility is repayable in equal quarterly installments of \$5 million of principal, commencing on June 30, 2020. The final maturity date is March 31, 2023. The interest rate is 4.5% plus the applicable USD LIBOR rate. The Credit Facility is subject to normal course financial covenants including a Debt Service Coverage Ratio of greater than 1.20:1 and a Net Debt to EBITDA ratio of less than 3:1. The Company is in compliance with all financial covenants of the Credit Facility as at December

31, 2019. Certain subsidiaries of the Company are guarantors under the Credit Facility, namely, Caystar Holdings, Bogoso Holdings, Wasford Holdings, Golden Star (Bogoso/Prestea) Limited, Golden Star (Wassa) Limited, and Caystar Finance Co.

Golden Star used a portion of the proceeds of the Credit Facility to repay Ecobank Loan III, Ecobank Loan IV, and the Vendor Agreement (as defined below) with Volta River Authority.

Lease liabilities

Lease liabilities include equipment lease agreements that the Company entered into during the year ended December 31, 2018 for a period of 24 months, totaling \$1.6 million as at December 31, 2019. Additionally, leases liabilities include \$1.7 million lease agreements related to the Company's corporate office space which have remaining lease terms of up to 6 years and interest rates of 6.5% - 7.5% over the terms of the lease.

Short-term lease payments for the period ended December 31, 2019 were \$6.8 million.

Ecobank Loan III

On February 22, 2017, the Company through its subsidiary Golden Star (Wassa) Limited closed a \$25 million secured Medium Term Loan Facility ("Ecobank Loan III") with Ecobank Ghana Limited. Ecobank Loan III had a term of 60 months from the date of initial drawdown and was secured by, among other things, Wassa's existing plant, and certain machinery and equipment having a specified value. The interest rate on the loan was three month LIBOR plus 8%, per annum, payable monthly in arrears beginning a month following the initial drawdown. Repayment of principal commenced six months following the initial drawdown and was thereafter payable quarterly in arrears. The Company had twelve months to drawdown the loan.

On January 24, 2018, the Company drew down \$15.0 million of the Ecobank Loan III. The full \$25.0 million had been drawn as at December 31, 2018.

As at December 31, 2019, the Ecobank III Loan had been fully repaid using the proceeds from the Credit Facility.

Ecobank Loan IV

On June 28, 2018, the Company through its subsidiary Golden Star (Wassa) Limited closed a \$20.0 million secured loan facility ("Ecobank Loan IV") with Ecobank Ghana Limited and used the facility to repay in full the \$20.0 million Royal Gold loan the Company had outstanding. The loan was secured by, among other things, Wassa's existing plant, and certain machinery and equipment having a specified value. There were no prepayment penalties associated with Ecobank Loan IV and the loan was repayable within 60 months of initial drawdown. Repayment of principal commenced September 2018 and was thereafter payable quarterly in arrears. Interest was payable monthly in arrears at an interest rate equal to three month LIBOR plus a spread of 7.5% per annum.

As at December 31, 2019, the Ecobank Loan IV had been fully repaid using the proceeds from the Credit Facility.

7% Convertible Debentures

The 7% Convertible Debentures were issued on August 3, 2016, in the amount of \$65.0 million due August 15, 2021. The Company entered into exchange and purchase agreements with two holders of its 5% Convertible Debentures due June 1, 2017 to exchange \$42.0 million principal amount of the outstanding 5% Convertible Debentures for an equal principal amount of 7% Convertible Debentures (the "Exchange"), with such principal amount being included in the issuance of the \$65.0 million total aggregate principal amount of the 7% Convertible Debentures. The Company did not receive any cash proceeds from the Exchange. The 7% Convertible Debentures are governed by the terms of an indenture dated August 3, 2016, by and between the Company and The Bank of New York Mellon, as indenture trustee.

The 7% Convertible Debentures are senior unsecured obligations of the Company, bear interest at a rate of 7.0% per annum, payable semi-annually on February 1 and August 1 of each year, beginning on February 1, 2017, and will mature on August 15, 2021, unless earlier repurchased, redeemed or converted. Subject to earlier redemption or purchase, the 7% Convertible Debentures are convertible at any time until the close of business on the third business day immediately preceding August 15, 2021 at the option of the holder, and may be settled, at the Company's election, in cash, common shares of the Company, or a combination of cash and common shares based on an initial conversion rate. The initial conversion rate of the 7% Convertible Debentures, subject to adjustment, is approximately 222 common shares of the Company per \$1,000 principal amount of 7% Convertible Debentures being converted, which is equivalent to an initial conversion price of approximately \$4.50 per common share. The initial conversion rate is subject to adjustment upon the occurrence of certain events. If the 7% Convertible Debentures are converted before August 1, 2019, the Company will, in addition to the consideration payable with the conversion, be required to make a conversion make-whole payment in cash, common shares of the Company or a combination thereof, at the Company's election, equal to the present value of the remaining scheduled payments of interest that would have been made on the 7% Convertible Debentures converted had such debentures remained outstanding from the conversion date to August 1, 2019, subject to certain restrictions. The present value of the remaining scheduled interest payments will be computed using a discount rate equal to 2.0%.

Prior to August 15, 2019, the Company could not redeem the 7% Convertible Debentures except in the event of certain changes in applicable tax law. On or after August 15, 2019, the Company may redeem all or part of the outstanding 7% Convertible Debentures at the redemption price, only if the last reported sales price of the Company's common shares for 20 or more trading days in a period of 30 consecutive trading days ending on the trading day prior to the date the Company provides the notice of redemption to holders exceeds 130% of the conversion price in effect on each such trading day. The redemption price is equal to the sum of (1) 100% of the principal amount of the 7% Convertible Debentures to be redeemed, (2) any accrued and unpaid interest to, but excluding, the redemption date, and (3) a redemption make-whole payment, payable in cash, common shares of the Company or a combination thereof, at the Company's election, equal to the present value of the remaining scheduled payments of interest that would have been made on the 7% Convertible Debentures to be redeemed had such debentures remained outstanding from the redemption date to August 15, 2021 (excluding interest accrued to, but excluding, the redemption date, which is otherwise paid pursuant to the preceding clause (2)).

The conversion feature referred to above is an embedded derivative. The Company selected to bifurcate the conversion feature from the host instrument, thereby separating it from the debt component. The debt component is recorded at amortized cost, and the embedded derivative is accounted for at fair value. At August 3, 2016, the date of the debt issuance, the fair value of the embedded derivative was \$12.3 million. At December 31, 2019, the fair value of the embedded derivative was \$5.6 million (December 31, 2018 - \$4.2 million). The revaluation loss of \$1.4 million is recorded in the Statement of Operations (year ended December 31, 2018 - revaluation gain of \$6.8 million).

There were no conversions of the 7% Convertible Debentures during 2019, therefore, as at December 31, 2019, \$51.5 million principal amount of 7% Convertible Debentures remains outstanding.

The changes in the carrying amount of the 7% Convertible Debentures are as follows:

	For the Years Ended December 31,	
	2019	2018
Beginning balance	\$ 44,612	\$ 42,515
Accretion of 7% Convertible Debentures discount	2,390	2,097
Balance at the end of the period	\$ 47,002	\$ 44,612

Vendor Agreement

On May 4, 2016, the Company entered into an agreement with Volta River Authority, a significant account creditor to settle \$36.5 million of current liabilities. Under this agreement, the Company paid \$12.0 million and deferred the payment of the remaining \$24.5 million until January 2018, after which the outstanding balance was repaid in equal installments over 24 months commencing on January 31, 2018. Interest of 7.5% accrued and was payable beginning in January 2017 (the "Vendor Agreement").

As at December 31, 2019, the Vendor Agreement had been fully repaid using the proceeds from the Credit Facility.

Debt Repayment Schedule

Schedule of payments on outstanding debt as of December 31, 2019:

	Year ending December 31, 2020	Year ending December 31, 2021	Year ending December 31, 2022	Year ending December 31, 2023	Year ending December 31, 2024	Year ending December 31, 2025	Maturity
Lease liabilities							
Principal	\$ 987	\$ 258	\$ 275	\$ 294	\$ 313	\$ 254	2025
Interest	106	81	64	45	25	5	
7% Convertible Debentures							
Principal	—	51,498	—	—	—	—	2021
Interest	3,605	3,605	—	—	—	—	
Macquarie Credit Facility							
Principal	15,000	20,000	20,000	5,000	—	—	2023
Interest	3,667	2,436	1,135	80	—	—	
Total principal	\$ 15,987	\$ 71,756	\$ 20,275	\$ 5,294	\$ 313	\$ 254	
Total interest	7,378	6,122	1,199	125	25	5	
	\$ 23,365	\$ 77,878	\$ 21,474	\$ 5,419	\$ 338	\$ 259	

13. SHARE CAPITAL

During the year ended December 31, 2018, the Company consolidated the common shares of the Company on the basis of one post-consolidation common share for every five pre-consolidation common shares. The common shares of the Company began trading on a consolidation-adjusted basis on the TSX and the NYSE American when the markets opened on October 30, 2018.

All share data and equity-based compensation plans have been retroactively adjusted to give effect to the consolidation.

	Note	Number of Common Shares	Share Capital
Balance at December 31, 2017		76,116,215	\$ 783,167
Private placement	a	32,642,100	125,672
Shares issued under DSUs		36,194	20
Shares issued under options		24,500	77
Share issue costs		—	(901)
Balance at December 31, 2018		108,819,009	\$ 908,035
Shares issued under options		437,772	2,054
Shares issued under PRSUs, net of tax		128,282	116
Balance at December 31, 2019		109,385,063	\$ 910,205

a. On October 1, 2018, the Company completed a \$125.7million strategic investment with La Mancha Holding S.à r.l. ("La Mancha"), a Luxembourg-incorporated private gold investment company through a private placement. La Mancha was issued 32,642,100 Golden Star common shares, representing approximately 30% of the outstanding share capital (on a non-diluted basis) after giving effect to La Mancha's investment.

14. COMMITMENTS AND CONTINGENCIES

Our commitments and contingencies include the following items:

Environmental bonding in Ghana

The Ghana Environmental Protection Agency ("EPA") requires environmental compliance bonds that provide assurance for environmental remediation at our Bogoso/Prestea and Wassa mining operations. To meet this requirement the Company has environmental bonds totaling \$9.6 million and \$8.1 million for Wassa and Bogoso/Prestea respectively, with a commercial bank in Ghana. These bonds are guaranteed by Golden Star Resources Ltd. There is also a cross guarantee between Wassa and Bogoso/Prestea. The Company also held cash deposits of \$1.1 million and \$1.0 million for each operation, which are recorded as restricted cash on the consolidated balance sheets.

Government of Ghana's rights to increase its participation

Under Act 703, the Government of Ghana has the right to acquire a special share in our Ghanaian subsidiaries at any time for no consideration or such consideration as the Government of Ghana and such subsidiaries might agree, and a pre-emptive right to purchase all gold and other minerals produced by such subsidiaries. A special share carries no voting rights and does not participate in dividends, profits or assets. If the Government of Ghana acquires a special share, it may require the Company to redeem the special share at any time for no consideration or for consideration determined by the Company. To date, the Government of Ghana has not sought to exercise any of these rights at our properties.

Royalties

Government of Ghana

The Government of Ghana receives a royalty equal to 5% of mineral revenues earned by Bogoso/Prestea and Wassa.

Asikuma Properties

As part of the acquisition of the Asikuma properties in 2003, the Company agreed to pay the seller a net smelter return royalty on future gold production from Mampon mineral property which is located on the Asikuma property. As per the acquisition agreement, there will be no royalty due on the first 200,000 ounces produced from Mampon. The amount of the royalty is based on a sliding scale which ranges from 2% of net smelter return at gold prices at or below \$300 per ounce and progressively increases to 3.5% for gold prices in excess of \$400 per ounce. Since the ounces mined at Mampon were below the 200,000 ounces threshold, we are not required to pay a royalty on this property.

Mansiso Properties

Bogoso Gold Limited agreed to grant, transfer and convey to Birim Goldfields (Ghana) Limited a net smelter return royalty of 3.5% for any average gold price above \$400 per ounce in respect of all mineral products that may be produced from the land pertaining to the Ghanaian Mansiso mineral property. During the year ended December 31, 2019, the Company accrued \$0.7 million (year ended December 31, 2018 - \$nil) in royalty payments related to the Mansiso mineral property.

Legal proceedings

The Company is involved in legal proceedings, from time to time, arising in the ordinary course of its business. It is not expected that any material liability will arise from current legal proceedings or have a material adverse effect on the Company's future business, operations or financial condition.

15. SHARE-BASED COMPENSATION

Share-based compensation expenses recognized in general and administrative expense in the Statements of Operations and Comprehensive Loss, are as follows:

	For the Years Ended December 31,	
	2019	2018
Share options	\$ 1,890	\$ 1,248
Deferred share units	689	565
Share appreciation rights	(52)	(502)
Performance share units	592	(33)
	<u>\$ 3,119</u>	<u>\$ 1,278</u>

Share options

On May 5, 2016, the Fourth Amended and Restated 1997 Stock Option Plan (the "Stock Option Plan") was approved by shareholders to (i) reserve an additional 2,000,000 common shares for the Stock Option Plan, thereby increasing the total number of common shares issuable from 5,000,000 common shares to 7,000,000 common shares under the Stock Option Plan; (ii) provide for the grant of "incentive stock options" (being stock options designated as "incentive stock options" in an option agreement and that are granted in accordance with the requirements of, and that conforms to the applicable provisions of, Section 422 of the Internal Revenue Code); and (iii) to make such other changes to update the provisions of the Stock Option Plan in light of current best practices. Options granted are non-assignable and are exercisable for a period of ten years or such other period as is stipulated in a stock option agreement between Golden Star and the optionee.

Under the Plan, we may grant options to employees, consultants and directors of the Company or its subsidiaries of up to 7,000,000 shares, of which 1,202,583 are available for grant as of December 31, 2019 (December 31, 2018 - 1,917,767). The exercise price of each option is not less than the closing price of our shares on the Toronto Stock Exchange on the day prior to the date of grant. Options typically vest over periods ranging from immediately to four years from the date of grant. Vesting periods are determined at the discretion of the Compensation Committee.

The fair value of option grants is estimated at the grant dates using the Black-Scholes option-pricing model. Fair values of options granted during the years ended December 31, 2019 and 2018 were based on the weighted average assumptions noted in the following table:

	For the Years Ended December 31,	
	2019	2018
Expected volatility	51.20%	70.06%
Risk-free interest rate	1.73%	2.39%
Expected lives	5.74 years	5.68 years

The weighted average fair value per option granted during the year ended December 31, 2019 was \$2.54 CAD (year ended December 31, 2018 - \$2.82 CAD). As at December 31, 2019, there was \$0.5 million of share-based compensation expense (December 31, 2018 - \$0.6 million) relating to the Company's share options to be recorded in future periods. For the year ended December 31, 2019, the Company recognized an expense of \$1.9 million (year ended December 31, 2018 - \$1.2 million).

A summary of option activity under the Company's Stock Option Plan during the years ended December 31, 2019 and 2018 is as follows:

	Options (^{'000})	Weighted- Average Exercise price (\$CAD)	Weighted- Average Remaining Contractual Term (Years)
Outstanding as of December 31, 2017	3,326	5.93	5.9
Granted	642	4.61	9.2
Exercised	(25)	3.24	1.6
Forfeited	(116)	8.96	3.6
Expired	(329)	9.35	0
Outstanding as of December 31, 2018	3,498	5.28	6.3
Granted	806	5.21	9.2
Exercised	(438)	3.82	7.3
Forfeited	(35)	5.49	7.7
Expired	(55)	8.50	0
Outstanding as of December 31, 2019	3,776	5.39	4.7
Exercisable as of December 31, 2018	2,664	5.42	5.5
Exercisable as of December 31, 2019	3,320	5.41	4.1

The number of options outstanding by strike price as of December 31, 2019 is shown in the following table:

Range of exercise price (Cdn\$)	Options outstanding			Options exercisable	
	Number outstanding at December 31, 2019	Weighted-average remaining contractual life	Weighted-average exercise price	Number outstanding at December 31, 2019	Weighted-average exercise price
	('000)	(years)	(Cdn\$)	('000)	(Cdn\$)
1.50 to 2.50	581	3.7	1.90	581	1.90
2.51 to 3.50	373	5.7	2.82	373	2.82
3.51 to 4.50	605	3.0	4.34	588	4.35
4.51 to 5.50	1,187	7.3	5.03	782	4.96
5.51 to 7.50	482	4.6	6.46	448	6.47
7.51 to 10.50	322	2.0	9.67	322	9.67
10.51 to 17.65	226	0.6	14.92	226	14.92
	3,776	4.7	5.39	3,320	5.41

The number of options outstanding by strike price as of December 31, 2018 is shown in the following table:

Range of exercise price (Cdn\$)	Options outstanding			Options exercisable	
	Number outstanding at December 31, 2018	Weighted-average remaining contractual life	Weighted-average exercise price	Number outstanding at December 31, 2018	Weighted-average exercise price
	('000)	(years)	(Cdn\$)	('000)	(Cdn\$)
1.50 to 2.50	604	6.1	1.90	604	1.90
2.51 to 3.50	534	7.1	2.81	405	2.82
3.51 to 4.50	581	4.9	4.35	581	4.35
4.51 to 5.50	689	9.1	4.63	205	4.68
5.51 to 7.50	487	7.7	6.48	266	6.46
7.51 to 10.50	378	2.9	9.50	378	9.50
10.51 to 17.65	225	1.9	14.92	225	14.92
	3,498	6.3	5.28	2,664	5.42

Deferred share units ("DSUs")

The Company's Deferred Share Unit Plan (the "DSU Plan") was adopted on March 9, 2011 and was amended and restated as of March 14, 2016 (the "Restatement Effective Date"). Pursuant to the DSU Plan, directors may elect to receive all or part of their retainer in DSUs having a market value equal to the portion of the retainer to be received in that form, subject to such limits as the Compensation Committee may impose. The Compensation Committee may also grant to any director or executive officer, in each year, DSUs having a market value not greater than the total compensation payable to such director or executive officer for that year, including any salary or bonus but excluding any director's retainer. The number of DSUs to be issued is determined by dividing the amount of the retainer or base salary determined as the basis for the award by the volume-weighted average trading price of a Common Share (as reported by the NYSE American) for the 20 trading days immediately preceding the date the DSUs are awarded. The vesting schedule of the DSUs is determined at the discretion of the Compensation Committee, but generally in the case of DSUs granted to directors in lieu of director retainers, the DSUs vest immediately on the award date. DSUs otherwise awarded to directors and officers as part of total compensation payable generally vest one-third on each of the first three anniversaries of the award date.

At the election of the Compensation Committee in its sole discretion, each DSU granted after the Restatement Effective Date may be redeemed for: (a) cash payment equal to the market value of one Common Share on the date of redemption (the "Redemption Value"), after deduction of applicable taxes and other source deductions required by applicable laws; (b) such number of common shares purchased by the Company on the public market as having an aggregate market value equal to the Redemption Value; or (c) any combination of the foregoing, so long as the aggregate redemption price has a fair market value equal to the Redemption Value. In addition to the foregoing, the Compensation Committee in its sole discretion, may redeem DSUs granted prior to the Restatement Effective Date for common shares issued by the Company from treasury.

For the year ended December 31, 2019, the DSUs that were granted vested immediately and a compensation expense of \$0.7 million was recognized for these grants (year ended December 31, 2018 - \$0.6 million). As of December 31, 2019, there was no unrecognized compensation expense related to DSUs granted under the Company's DSU Plan.

A summary of DSU activity during the years ended December 31, 2019 and 2018:

	For the Years Ended December 31,	
	2019	2018
Number of DSUs, beginning of period ('000)	1,086	1,018
Granted	188	150
Exercised	—	(82)
Number of DSUs, end of period ('000)	<u>1,274</u>	<u>1,086</u>

Share appreciation rights ("SARs")

On February 13, 2012, the Company adopted a Share Appreciation Rights ("SARs") Plan. The plan allows SARs to be issued to executives, employees and directors that vest after a period of three years. These awards are settled in cash on the exercise date equal to the Company's stock price less the strike price. Since these awards are settled in cash, the Company marks-to-market the associated expense for each award at the end of each reporting period using a Black-Scholes model. The Company accounts for these as liability awards and marks-to-market the fair value of the award until final settlement.

As of December 31, 2019, there was approximately \$0.1 million of total unrecognized compensation cost related to unvested SARs (December 31, 2018 - \$0.3 million). For the year ended December 31, 2019, the Company recognized a recovery of \$0.1 million related to these cash settled awards (year ended December 31, 2018 - recovery of \$0.5 million).

A summary of the SARs activity during the year ended December 31, 2019 and 2018:

	For the Years Ended December 31,	
	2019	2018
Number of SARs, beginning of period ('000)	674	533
Granted	285	304
Exercised	(203)	(36)
Forfeited	(160)	(127)
Expired	(3)	—
Number of SARs, end of period ('000)	<u>593</u>	<u>674</u>

Performance share units ("PSUs")

On January 1, 2014, the Company adopted a Performance Share Unit ("PSU") Plan. Each PSU represented one notional common share that was redeemed for cash based on the value of a common share at the end of the three-year performance period, to the extent performance and vesting criteria had been met. The PSUs vested at the end of a three-year performance period. The cash award was determined by multiplying the number of units by the performance adjustment factor, which ranged from 0% to 200%. The performance adjustment factor was determined by comparing the Company's share price performance to the share price performance of a peer group of companies as listed in the PSU Plan. As the Company was required to settle these awards in cash, they were accounted for as liability awards with corresponding compensation expense recognized.

The final PSU grant vested on December 31, 2018 and, as a result, the Company did not recognize a PSU expense in 2019. For the year ended December 31, 2018 the Company recognized a \$0.4 million recovery related to PSU's. The Company paid out the final amount owing of \$6.4 million in April 2019 and as at December 31, 2019 there is no longer a PSU liability recognized on the Balance Sheet.

A summary of the PSU activity during the year ended December 31, 2019 and 2018:

	For the Years Ended December 31,	
	2019	2018
Number of PSUs, beginning of period ('000)	1,173	2,721
Settled	(1,173)	(1,548)
Number of PSUs, end of period ('000)	<u>—</u>	<u>1,173</u>

2017 Performance and restricted share units ("PRsUs")

On May 4, 2017, the Company adopted a 2017 performance and restricted share unit plan (the "2017 PRsU Plan"). Pursuant to the 2017 PRsU Plan, performance share units ("2017 PSUs") and restricted share units ("2017 RSUs" and, together with the 2017 PSUs, the "Share Units") may be issued to any employee or officer of the Company or its designated affiliates. Share Units may be redeemed for: (i) common shares issued from treasury; (ii) common shares purchased in the secondary market; (iii) a cash payment; or (iv) a combination of (i), (ii) and (iii). Under the 2017 PRsU plan, the Company may grant up to a maximum of 2,200,000 common shares. As at December 31, 2019, 1,242,155 share units were available for grant.

Each PRsU represents one notional common share that is redeemed for common shares or common shares plus cash subject to the consent of the Company based on the value of a common share at the end of the three year performance period, to the extent performance and vesting criteria have been met. The PRsUs vest at the end of a three year performance period. The award is determined by multiplying the number of Share Units by the performance adjustment factor, which ranges from 0% to 200%. The performance adjustment factor is determined by comparing the Company's share price performance to the share price performance of a peer group of companies as listed in the 2017 PRsU Plan. As the Company has a practice of settling these awards in common shares, they are accounted for as equity awards with corresponding compensation expense recognized.

PRsUs are accounted for as equity awards with a corresponding compensation expense recognized. For the year ended December 31, 2019, the Company recognized \$0.6 million expense (year ended December 31, 2018 - \$0.3 million).

A summary of the PRsU activity during the years ended December 31, 2019 and 2018:

	For the Years Ended December 31,	
	2019	2018
Number of PRsUs, beginning of period ('000)	791	339
Granted	561	480
Settled	(324)	—
Forfeited	(394)	(28)
Number of PRsUs, end of period ('000)	634	791

16. LOSS PER COMMON SHARE

The following table provides a reconciliation between basic and diluted loss per common share:

	For the Years Ended December 31,	
	2019	2018
Net loss attributable to Golden Star shareholders	\$ (67,434)	\$ (18,123)
Weighted average number of basic shares (millions)	109.0	84.3
Loss per share attributable to Golden Star shareholders:		
Basic	\$ (0.62)	\$ (0.21)
Diluted	\$ (0.62)	\$ (0.21)

17. REVENUE

Revenue includes the following components:

	For the Years Ended December 31,	
	2019	2018
Revenue - Streaming Agreement		
Cash payment proceeds	\$ 6,027	\$ 6,036
Deferred revenue recognized	13,334	13,738
Variable consideration adjustment	(9,262)	—
	10,099	19,774
Revenue - Spot sales	254,638	253,243
Total revenue	<u>\$ 264,737</u>	<u>\$ 273,017</u>

18. COST OF SALES EXCLUDING DEPRECIATION AND AMORTIZATION

Cost of sales excluding depreciation and amortization include the following components:

	For the Years Ended December 31,	
	2019	2018
Contractors	\$ 24,249	\$ 32,536
Electricity	17,598	17,663
Fuel	7,773	7,347
Raw materials and consumables	41,377	41,910
Salaries and benefits	60,943	58,501
Transportation costs	1,329	1,751
General and administrative	9,833	9,490
Other	7,047	6,830
Mine operating expenses	<u>\$ 170,149</u>	<u>\$ 176,028</u>
Severance charges	368	14,858
Operating costs (to)/from metal inventory	(353)	12,886
Inventory net realizable value adjustment and write-off	1,216	5,655
Royalties	14,960	14,302
	<u>\$ 186,340</u>	<u>\$ 223,729</u>

19. IMPAIRMENT CHARGES

In the fourth quarter of 2019, the Company completed its annual budgeting process. Management observed a decrease in the Prestea mine's cash flow reflecting adjustments to key mine planning, cost and working capital assumptions following the conclusion of the independent review of the underground operations at Prestea which resulted in a trigger for an impairment test.

The recoverable amount of the Prestea CGU of \$nil was determined based on a discounted cash flow analysis of an indicative life of mine model. This life of mine model is management's best estimate of the recoverable amount of Prestea's assets at December 31, 2019.

The impairment test concluded that the recoverable amount of the Prestea CGU using a Value In Use model was lower than its carrying value as at December 31, 2019. This resulted in an impairment charge of \$56.8 million to the consolidated statement of operations and comprehensive loss and a reduction in the carrying value of Prestea's assets.

Key Assumptions:

The key assumptions used in determining the recoverable amount of the Prestea CGU include gold price, discount rate and life of mine.

	2019 Test
Assumptions	
Gold Price per oz - short term	\$1,435 - \$1,500
Gold Price per oz - long term	\$1,400
Discount Rate	7%
Life of Mine (years)	7

Changes in gold price and the discount rate assumptions can have a material impact on the recoverable value of each CGU. A significant change in gold prices will result in a reassessment of our life of mine plans, including the determination of reserves and resources which will impact on the recoverable amount of the CGUs.

The Company ran sensitivities at Prestea assuming a +/- \$100/oz price for gold as well as a +/- 1% change in the discount rate using the existing discounted cash flow model. Management concluded that an increase of \$100/oz over the life of the mine would reduce the impairment charge to \$30.0 million. None of the other changes would have had a material impact on the impairment charge.

Gold Price - Management estimated gold prices by considering the average of the most recent market commodity price forecasts from a number of recognized financial analysts.

Discount rate - A pre-tax discount rate was based on the Company's estimated weighted average cost of capital.

Life of Mine - The life of mine was estimated using management's latest information including Prestea's latest reserves and resources estimates as well as information gathered from the independent operational review.

20. FINANCE EXPENSE, NET

Finance income and expense includes the following components:

	For the Years Ended December 31,	
	2019	2018
Interest income	\$ (1,442)	\$ (559)
Interest expense, net of capitalized interest	10,715	13,281
Interest on financing component of deferred revenue (see Note 11)	4,288	4,750
Variable adjustment component (see Note 11)	(6,189)	—
Net foreign exchange gain	(479)	(91)
Accretion of rehabilitation provision	730	691
	<u>\$ 7,623</u>	<u>\$ 18,072</u>

On February 1, 2018, Prestea Underground mine achieved commercial production, therefore no capitalized interest was recorded since.

21. OTHER EXPENSE/(INCOME)

Other expense/(income) includes the following components:

	For the Years Ended December 31,	
	2019	2018
Loss/(gain) on disposal of assets	165	(305)
Gain on reduction of asset retirement obligations	(179)	(3,080)
Corporate office relocation costs	7,221	—
Other expense/(income)	4,358	(218)
	<u>\$ 11,565</u>	<u>\$ (3,603)</u>

22. RELATED PARTY TRANSACTIONS

There were no material related party transactions for the years ended December 31, 2019 and 2018 other than the items disclosed below.

Key management personnel

Key management personnel is defined as members of the Board of Directors and certain senior officers. Compensation of key management personnel are as follows, with such compensation made on terms equivalent to those prevailing in an arm's length transaction:

	For the Years Ended December 31,	
	2019	2018
Salaries, wages, and other benefits	\$ 5,469	\$ 3,753
Bonuses	1,947	1,052
Share-based compensation	2,547	1,965
	<u>\$ 9,963</u>	<u>\$ 6,770</u>

23. PRINCIPAL SUBSIDIARIES

The consolidated financial statements include the accounts of the Company and all of its subsidiaries at December 31, 2019. The principal operating subsidiaries are Wassa and Prestea, in which the Company has a 90% ownership interest in each.

Set out below is summarized financial information for each subsidiary that has non-controlling interests that are material to the group. The amounts are disclosed on a 100% basis and disclosure for each subsidiary are based on those included in the consolidated financial statements before inter-company eliminations.

Summarized statement of financial position

	Wassa		Prestea	
	As of December 31,		As of December 31,	
	2019	2018	2019	2018
Non-controlling interest percentage	10%	10%	10%	10%
Current assets	\$ 142,603	\$ 129,656	\$ 14,623	\$ 13,633
Current liabilities	163,640	150,404	1,267,815	1,152,156
	(21,037)	(20,748)	(1,253,192)	(1,138,523)
Non-current assets	182,982	141,262	79,788	134,090
Non-current liabilities	37,327	42,588	45,871	62,737
	145,655	98,674	33,917	71,353
Net assets/(liabilities)	124,618	77,926	(1,219,275)	(1,067,170)
Non-controlling interest	<u>\$ 20,275</u>	<u>\$ 15,605</u>	<u>\$ (102,788)</u>	<u>\$ (87,578)</u>

Summarized income statement

	Wassa		Prestea	
	For the years ended December 31,		For the years ended December 31,	
	2019	2018	2019	2018
Revenue	\$ 216,678	\$ 190,016	\$ 66,820	\$ 93,134
Net income/(loss) and comprehensive income/(loss)	46,691	30,491	(152,106)	(88,332)

Summarized cash flows

	Wassa		Prestea	
	For the years ended December 31,		For the years ended December 31,	
	2019	2018	2019	2018
Cash flows provided by/(used in) operating activities	78,809	57,897	(88,883)	(77,115)
Cash flows used in investing activities	(49,622)	(34,984)	(10,685)	(11,956)
Cash flows (used in)/provided by financing activities	(26,993)	(31,112)	98,994	85,581

24. SEGMENTED INFORMATION

Segmented revenue and results

The Company has reportable segments as identified by the individual mining operations. Segments are operations reviewed by the executive management. Each segment is identified based on quantitative and qualitative factors.

For the Years Ended December 31,	Wassa	Prestea	Other	Corporate	Total
2019					
Revenue	\$ 203,820	\$ 60,917	—	—	\$ 264,737
Mine operating expenses	98,722	71,427	—	—	170,149
Severance charges	225	143	—	—	368
Operating costs from/(to) metal inventory	299	(652)	—	—	(353)
Inventory net realizable value adjustment and write-off	—	1,216	—	—	1,216
Royalties	10,877	4,083	—	—	14,960
Cost of sales excluding depreciation and amortization	110,123	76,217	—	—	186,340
Depreciation and amortization	17,134	11,920	—	—	29,054
Mine operating margin/(loss)	76,563	(27,220)	—	—	49,343
Impairment charges	—	56,762	—	—	56,762
Income tax expense	27,439	—	—	—	27,439
Net income/(loss) attributable to non-controlling interest	4,671	(15,211)	—	—	(10,540)
Net income/(loss) attributable to Golden Star	\$ 35,357	\$ (72,751)	\$ 1,190	\$ (31,230)	\$ (67,434)
Capital expenditures	\$ 60,123	\$ 13,018	—	—	\$ 73,141
2018					
Revenue	\$ 183,078	\$ 89,939	\$ —	\$ —	\$ 273,017
Mine operating expenses	86,916	89,112	—	—	176,028
Severance charges	4,970	9,888	—	—	14,858
Operating costs from metal inventory	7,184	5,702	—	—	12,886
Inventory net realizable value adjustment and write-off	3,684	1,971	—	—	5,655
Royalties	9,508	4,794	—	—	14,302
Cost of sales excluding depreciation and amortization	112,262	111,467	—	—	223,729
Depreciation and amortization	22,066	11,873	—	—	33,939
Mine operating margin/(loss)	48,750	(33,401)	—	—	15,349
Income tax expense	12,350	—	—	—	12,350
Net income/(loss) attributable to non-controlling interest	3,043	(8,991)	—	—	(5,948)
Net income/(loss) attributable to Golden Star	\$ 27,994	\$ (25,351)	\$ (8,543)	\$ (12,223)	\$ (18,123)
Capital expenditures	\$ 35,420	\$ 11,414	—	—	\$ 46,834

Segmented Assets

The following table presents the segmented assets:

	Wassa	Prestea	Other	Corporate	Total
December 31, 2019					
Total assets	\$ 233,634	\$ 94,453	\$ 2,951	\$ 43,022	\$ 374,060
December 31, 2018					
Total assets	\$ 181,446	\$ 147,815	\$ 898	\$ 87,828	\$ 417,987

Information about major customers

Currently, approximately 90% of our gold production is sold through a South African gold refinery. Except for the sales to RGLD as part of the Streaming Agreement, the refinery arranges for the sale of gold on the day it is shipped from the mine sites and we receive payment for gold sold two working days after the gold leaves the mine site. The global gold market is competitive with numerous banks and refineries willing to buy gold on short notice. Therefore, we believe that the loss of one of our current customers would not materially delay or disrupt revenue.

25. SUPPLEMENTAL CASH FLOW INFORMATION

During the year ended December 31, 2019, the Company paid \$7.7 million of income taxes and \$7.1 million of interest (the year ended December 31, 2018 - \$nil and \$7.9 million, respectively).

Changes in working capital for the years ended December 31, 2019 and 2018 are as follows:

	For the Years Ended December 31,	
	2019	2018
(Increase)/decrease in accounts receivable	\$ (3,290)	\$ 215
(Increase)/decrease in inventories	(4,861)	9,187
Increase in prepaids and other	(180)	(737)
Increase/(decrease) in accounts payable and accrued liabilities	753	(25,837)
Decrease in other liability (see Note 15)	(6,410)	—
Total changes in working capital	\$ (13,988)	\$ (17,172)

Other includes the following components:

	For the Years Ended December 31,	
	2019	2018
Loss/(gain) on disposal of assets	\$ 165	\$ (305)
Inventory net realizable value adjustment and write-off	1,216	5,544
Loss on fair value of marketable securities	9	175
Unrealized loss on non-hedge derivative contracts	211	—
Accretion of vendor agreement	731	731
Accretion of rehabilitation provisions (see Note 10)	730	691
Amortization of financing fees	642	1,322
Accretion of 7% Convertible Debentures discount	2,390	2,097
Interest on lease obligation (see Note 3)	22	—
Gain on reduction of rehabilitation provisions	(179)	(3,080)
Interest on financing component of deferred revenue (see Note 11)	4,288	4,750
Variable consideration adjustment (See Note 11)	3,073	—
PRSU settlement	(349)	—
	\$ 12,949	\$ 11,925

Reconciliation of debt arising from financing activities during the years ended December 31, 2019 and 2018:

	Equipment financing credit facility	Lease liabilities	Ecobank Loan III	Ecobank Loan IV	Vendor Agreement	7% Convertible Debentures	Royal Gold loan	Macquarie Credit Facility	Total
December 31, 2017	\$ 147	\$ 1,498	\$ 9,559	\$ —	\$ 23,069	\$ 42,515	\$ 18,817	\$ —	\$ 95,605
<i>Cash flows</i>									
Proceeds from debt agreements	—	—	15,000	20,000	—	—	—	—	35,000
Principal payments on debt	(147)	(1,714)	(4,723)	(1,999)	(7,024)	—	—	—	(15,607)
Royal Gold loan repayment	—	—	—	—	—	—	(20,000)	—	(20,000)
<i>Non-cash changes</i>									
Capitalized loan fee	—	—	—	(340)	—	—	—	—	(340)
Equipment lease	—	1,899	—	—	—	—	—	—	1,899
Accretion of debt	—	—	99	39	731	2,097	1,183	—	4,149
December 31, 2018	\$ —	\$ 1,683	\$ 19,935	\$ 17,700	\$ 16,776	\$ 44,612	\$ —	\$ —	\$ 100,706
<i>Cash flows</i>									
Proceeds from debt agreements	—	—	—	—	—	—	—	60,000	60,000
Principal payments on debt	—	(1,441)	(20,277)	(18,000)	(17,507)	—	—	—	(57,225)
<i>Non-cash changes</i>									
Capitalized loan fee	—	—	—	—	—	—	—	(2,614)	(2,614)
Corporate office lease	—	2,139	—	—	—	—	—	—	2,139
Accretion of debt	—	—	342	300	731	2,390	—	—	3,763
December 31, 2019	\$ —	\$ 2,381	\$ —	\$ —	\$ —	\$ 47,002	\$ —	\$ 57,386	\$ 106,769

26. FINANCIAL RISK MANAGEMENT

Our exposure to market risk includes, but is not limited to, the following risks: changes in interest rates on our debt, changes in foreign currency exchange rates and commodity price fluctuations.

Liquidity risk

Liquidity risk is the risk that the Company will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset. We manage the liquidity risk inherent in these financial obligations by preparing monthly financial summaries, quarterly forecasts and annual long-term budgets which forecast cash needs and expected cash availability to meet future obligations. Typically these obligations are met by cash flows from operations and from cash on hand. Scheduling of capital spending and acquisitions of financial resources may also be employed, as needed and as available, to meet the cash demands of our obligations.

Our ability to repay or refinance our future obligations depends on a number of factors, some of which may be beyond our control. Factors that influence our ability to meet these obligations include general global economic conditions, credit and capital market conditions, results of operations, mineral reserves and resources and the price of gold.

Macquarie Credit Facility Financial Covenants

The Macquarie Credit Facility includes covenant clauses requiring the Company to maintain certain key financial ratios. The Company must maintain a Debt Service Coverage Ratio of greater than 1.20:1, tested quarterly on a rolling four-quarter basis as at the end of each of the fiscal quarters beginning with the fiscal quarter ending June 30, 2020; maintain a ratio of Net Debt to EBITDA of less than 3.00:1, tested quarterly on a rolling four-quarter basis as at the end of each of the fiscal quarters; demonstrate, on the basis of the consolidated financial statements and annual consolidated corporate budget, that from December 31, 2020 and for each fiscal quarter thereafter, the Convertible Debentures can be repaid in full in cash by the maturity in August 2021 while maintaining (after giving effect to such repayment in cash) a positive cash position (excluding restricted cash) of \$25 million; and ensure that at all times the sum of aggregate indebtedness does not exceed \$116.5 million.

The following table shows our contractual obligations as at December 31, 2019:

(Stated in thousands of U.S dollars)	Payment due (in thousands) by period				
	Less than 1 Year	1 to 3 years	4 to 5 years	More than 5 Years	Total
Accounts payable and accrued liabilities	\$ 90,842	\$ —	\$ —	\$ —	\$ 90,842
Debt ¹	15,000	91,498	5,000	—	111,498
Lease liabilities	987	533	607	254	2,381
Interest on long term debt	7,378	7,321	150	5	14,854
Purchase obligations	17,318	—	—	—	17,318
Rehabilitation provisions ²	5,826	17,749	25,877	24,316	73,768
Total	\$ 137,351	\$ 117,101	\$ 31,634	\$ 24,575	\$ 310,661

¹ Includes the outstanding repayment amounts from the 7% Convertible Debentures maturing on August 15, 2021 and the Macquarie Credit Facility.

² Rehabilitation provisions indicates the expected undiscounted cash flows for each period.

As at December 31, 2019, the Company has current assets of \$107.3 million compared to current liabilities of \$123.8 million. As at December 31, 2019, the Company had a cash balance of \$53.4 million.

The Company expects to meet its short-term financial needs through its cash on hand and cash flow from operations.

Interest rate risk

Interest rate risk is the risk that the future cash flows of a financial instrument will fluctuate because of changes in market interest rates. The Macquarie Credit Facility is 4.5% plus the applicable USD LIBOR rate. Based on our current \$60.0 million outstanding balance, a 100 basis point change in the USD LIBOR rate would result in a nominal change in interest expense. We have not entered into any agreements to hedge against unfavorable changes in interest rates, but may in the future actively manage our exposure to interest rate risk.

Foreign currency exchange rate risk

Currency risk is risk that the fair value of future cash flows will fluctuate because of changes in foreign currency exchange rates. In addition, the value of cash and cash equivalents and other financial assets and liabilities denominated in foreign currencies can fluctuate with changes in currency exchange rates.

Since our revenues are denominated in U.S. dollars and our operating units transact much of their business in U.S. dollars, we are typically not subject to significant impacts from currency fluctuations. However, certain purchases of labor, operating supplies and capital assets are denominated in Ghana cedis, euros, British pounds, Australian dollars, South African rand and Canadian dollars. To accommodate these purchases, we maintain operating cash accounts in non-US dollar currencies and appreciation of these non-US dollar currencies against the U.S. dollar results in a foreign currency gain and a decrease in non-U.S. dollar currencies results in a loss. In the past, we have entered into forward purchase contracts for South African rand, euros and other currencies to hedge expected purchase costs of capital assets. During 2019 and 2018, we had no currency related derivatives. At December 31, 2019 and December 31, 2018, we held \$6.1 million and \$1.9 million, respectively, of foreign currency.

Commodity price risk

Gold is our primary product and, as a result, changes in the price of gold can significantly affect our results of operations and cash flows. Based on our gold production in the year, a \$100 per ounce change in gold price would result in approximately a \$18.7 million and \$17.8 million change in our sales revenues and operating cash flows, respectively. To reduce gold price volatility, we have at various times entered into gold price hedges. During the year ended December 31, 2019, the Company entered into costless collars consisting of puts and calls, on 50,000 ounces of gold with a floor price of \$1,400 per ounce and a ceiling price of \$1,750 per ounce with maturity dates ranging from October 2019 to September 2020. During the year ended December 31, 2019, the Company recognized an unrealized loss of \$0.2 million on the non-hedge accounted collar contracts.

Credit risk

Credit risk is the risk that one party to a financial instrument will cause a financial loss for the other party by failing to discharge an obligation. Our credit risk is primarily associated with liquid financial assets and derivatives. We limit exposure to credit risk on liquid financial assets by holding our cash, cash equivalents, restricted cash and deposits at highly-rated financial institutions. Risks associated with gold trade receivables is considered minimal as we sell gold to a credit-worthy buyer who settles promptly within two days of receipt of gold bullion.

27. CAPITAL RISK MANAGEMENT

The Company manages its capital in a manner that will allow it to continue as a going concern while maximizing the return to shareholders through the optimization of the debt and equity balance.

In the management of capital, the Company includes the components of equity, long-term debt, net of cash and cash equivalents, and investments.

	As of December 31, 2019	As of December 31, 2018
(Deficiency)/equity	\$ (32,123)	\$ 42,037
Long-term debt	90,782	73,224
	\$ 58,659	\$ 115,261
Cash and cash equivalents	(53,367)	(96,507)
	<u>\$ 5,292</u>	<u>\$ 18,754</u>

The Company manages its capital structure and makes adjustments to it in light of changes in economic conditions and the risk characteristics of the underlying assets. In doing so, the Company may issue new shares, restructure or issue new debt and acquire or dispose of assets.

In order to facilitate the management of its capital requirements, the Company prepares annual budgets that are updated as necessary depending on various factors, including successful capital deployment and general industry conditions. The Company's treasury policy specifies that cash is to be held in banks with a rating of A or higher by Moody's Investors Service or Standard & Poor's Financial Services LLC. In addition, the Company's investment policy allows investment of surplus funds in permitted investments consisting of US treasury bills, notes and bonds, government sponsored agency debt obligations, corporate debt or municipal securities with credit rating of at least AA. All investments must have a maximum term to maturity of one year.

GOLDEN STAR

The logo for Golden Star, featuring a stylized eight-pointed star with a white center and gold points, positioned between the letters 'S' and 'T' of the word 'STAR'.

Management's Discussion and Analysis

For the Year Ended December 31, 2019

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MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") provides information that management believes is relevant to an assessment and understanding of the consolidated financial condition and results of operations of Golden Star Resources Ltd. and its subsidiaries ("Golden Star" or "the Company" or "we" or "our"). This MD&A should be read in conjunction with the Company's consolidated financial statements and related notes for the year ended December 31, 2019, which are prepared in accordance with International Financial Reporting Standards ("IFRS") as issued by the International Accounting Standards Board. This MD&A includes information available to, and is dated, February 18, 2020. Unless noted otherwise, all currency amounts are stated in U.S. dollars and all financial information presented in this MD&A is prepared in accordance with IFRS.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING INFORMATION

This MD&A contains "forward-looking information" within the meaning of applicable Canadian securities laws and "forward-looking statements" within the meaning of the United States Private Securities Litigation Reform Act of 1995 concerning the business, operations and financial performance and condition of Golden Star. Generally, forward-looking information and statements can be identified by the use of forward-looking terminology such as "plans", "expects", "is expected", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates", "believes" or variations of such words and phrases (including negative or grammatical variations) or statements that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved" or the negative connotation or grammatical variation thereof. Forward-looking information and statements in this MD&A include, but are not limited to, information or statements with respect to: gold production, cash operating costs, and all-in sustaining costs estimates and guidance for 2020 on a consolidated and per mine basis; the expected allocation of the Company's sources of production; sustaining and development capital expenditure estimates and guidance for 2020 on a consolidated and per mine basis; the Company's achievement of 2020 consolidated guidance; the expected range of consolidated gold production for 2020; expected grade and mining rates for 2020; expected management changes at the Company and its subsidiaries in the first half of 2020; the expected closing of the Company's Toronto office and relocation of the executive team in the first half of 2020; the anticipated effectiveness of the Hedging Program over the next 12 months; the accuracy of CSA Global's evaluation of outcomes of Phase 2 design and schedule review of Prestea Underground and its impact on the anticipated time frame to bring Prestea into a profitable operation and expected 2020 budget for capital expenditures; the implementation of Long Hole Open Stopping at Prestea and the timing thereof, as well as the impact on development productivity at Prestea; the implementation of the redesign of Alimak stopping from 21L - 24L at Prestea and the reduction of development dilution and improved dilution; the Company's debt servicing obligations for 2020; the ability of Wassa to offset losses at Prestea; the ability to improve the total grade endowment of the Father Brown/ADK project; the intended reduction of costs for the next twelve months; the timing for rehabilitation work and the expected discounted rehabilitation costs; identification of acquisition and growth opportunities; the ability of Prestea being a sustainably profitable mine in the future; the timing for an updated mine plan for Prestea; capital expenditures, including the quantum of those expenditures that are discretionary; and the Company having sufficient cash available to support its operations and mandatory expenditures for the next twelve months.

Forward-looking information and statements are made based upon certain assumptions and other important factors that, if untrue, could cause the actual results, performance or achievements of Golden Star to be materially different from future results, performance or achievements expressed or implied by such statements. Such statements and information are based on numerous assumptions regarding present and future business strategies and the environment in which Golden Star will operate in the future, including the price of gold, anticipated costs and ability to achieve goals. Certain important factors that could cause actual results, performances or achievements to differ materially from those set forth in the forward-looking information and statements include, among others, gold price volatility, discrepancies between actual and estimated production, mineral reserves and resources and metallurgical recoveries, mining operational and development risks, litigation risks, liquidity risks, suppliers suspending or denying delivery of products or services, regulatory restrictions (including environmental regulatory restrictions and liability), actions by governmental authorities (including changes in taxation), currency fluctuations, the speculative nature of gold exploration, the global economic climate, dilution, share price volatility, the availability of capital on reasonable terms or at all, local and community impacts and issues, results of pending or future feasibility studies, competition, loss of key employees, additional funding requirements and defective title to mineral claims or property. Although Golden Star has attempted to identify important factors that could cause actual results, performance or achievements to differ materially from those described in forward-looking information and statements, there may be other factors that cause actual results, performance or achievements not to be as anticipated, estimated or intended.

Forward-looking information and statements are subject to known and unknown risks, uncertainties and other important factors that may cause the actual results, performance or achievements of Golden Star to be materially different from those expressed or implied by such forward-looking information and statements, including but not limited to: risks related to international operations, including economic and political instability in foreign jurisdictions in which Golden Star operates; risks related to current global financial conditions; actual results of current exploration activities; environmental risks; future prices of gold; possible variations

in mineral reserves and mineral resources, grade or recovery rates; mine development and operating risks; an inability to obtain power for operations on favourable terms or at all; mining plant or equipment breakdowns or failures; an inability to obtain products or services for operations or mine development from vendors and suppliers on reasonable terms, including pricing, or at all; accidents, labor disputes and other risks of the mining industry; delays in obtaining governmental approvals or financing or in the completion of development or construction activities; risks related to indebtedness and the service of such indebtedness, as well as those factors discussed in the section entitled “Risk Factors” in Golden Star's Annual Information Form for the year ended December 31, 2018 (filed on March 29, 2019). Although Golden Star has attempted to identify important factors that could cause actual results, performances and achievements to differ materially from those contained in forward-looking information and statements, there may be other factors that cause results, performance and achievements not to be as anticipated, estimated or intended. There can be no assurance that such statements will prove to be accurate, as actual results, performance, and achievements and future events could differ materially from those anticipated in such statements. Accordingly, readers should not place undue reliance on forward-looking information and statements. Forward-looking information and statements are made as of the date hereof and accordingly are subject to change after such date. Except as otherwise indicated by Golden Star, these statements do not reflect the potential impact of any non-recurring or other special items or of any dispositions, monetizations, mergers, acquisitions, other business combinations or other transactions that may be announced or that may occur after the date hereof. Forward-looking information and statements are provided for the purpose of providing information about management's current expectations and plans and allowing investors and others to get a better understanding of the Company's operating environment. Golden Star does not undertake to update any forward-looking information and statements that are included in this MD&A, except as required by applicable securities laws.

CAUTIONARY NOTE REGARDING RESERVES AND RESOURCES

Scientific and technical information contained in this MD&A was reviewed and approved by S. Mitchel Wasel, BSc Geology, who is a Qualified Person pursuant to National Instrument 43-101 (“NI 43-101”). Mr. Wasel is Vice President Exploration for Golden Star and an active member of the Australasian Institute of Mining and Metallurgy. All mineral reserves and mineral resources have been calculated in accordance with the standards of the Canadian Institute of Mining, Metallurgy and Petroleum (“CIM”) and in compliance with the requirements of NI 43-101. All mineral resources are reported inclusive of mineral reserves. Mineral resources which are not mineral reserves do not have demonstrated economic viability. Information on data verification performed on, and other scientific and technical information relating to, the mineral properties mentioned in this MD&A that are considered to be material mineral properties of the Company are contained in Golden Star's Annual Information Form for the year ended December 31, 2018 and the following current technical reports for those properties available at www.sedar.com: (i) Wassa - “NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources, Wassa Gold Mine, Ghana” effective date December 31, 2018; and (ii) Prestea Underground - “NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources, Bogoso/Prestea Gold Mine, Ghana” effective date December 31, 2017.

Cautionary Note to U.S. Investors

This MD&A has been prepared in accordance with the requirements of the securities laws in effect in Canada, which differ materially from the requirements of United States securities laws applicable to U.S. companies. Information concerning our mineral properties has been prepared in accordance with the requirements of Canadian securities laws, which differ in material respects from the requirements of the United States Securities and Exchange Commission (the “SEC”) set forth in Industry Guide 7. Under the SEC's Industry Guide 7, mineralization may not be classified as a “reserve” unless the determination has been made that the mineralization could be economically and legally produced or extracted at the time of the reserve determination, and the SEC does not recognize the reporting of mineral deposits which do not meet the SEC Industry Guide 7 definition of “Reserve”. In accordance with NI 43-101, the terms “mineral reserve”, “proven mineral reserve”, “probable mineral reserve”, “mineral resource”, “measured mineral resource”, “indicated mineral resource” and “inferred mineral resource” are defined in accordance with CIM standards. While the terms “mineral resource”, “measured mineral resource”, “indicated mineral resource” and “inferred mineral resource” are recognized and required by NI 43-101, the SEC does not recognize them. You are cautioned that, except for that portion of mineral resources classified as mineral reserves, mineral resources do not have demonstrated economic viability. Inferred mineral resources have a high degree of uncertainty as to their existence and as to whether they can be economically or legally mined. It cannot be assumed that all or any part of an inferred mineral resource will ever be upgraded to a higher category. Therefore, you are cautioned not to assume that all or any part of an inferred mineral resource exists, that it can be economically or legally mined, or that it will ever be upgraded to a higher category. Likewise, you are cautioned not to assume that all or any part of measured mineral resources or indicated mineral resources will ever be upgraded into mineral reserves.

OVERVIEW OF GOLDEN STAR

Golden Star is an established, African-focused gold producer that holds a 90% interest in two producing gold mines in Ghana.

The Wassa Complex (“Wassa”) became an underground-only operation in January 2017. The Prestea Complex (“Prestea”) comprises the Prestea Open Pits and the Prestea Underground Mine (“Prestea Underground”) and is planned to become an underground-only operation. The Wassa Underground Mine (“Wassa Underground”) achieved commercial production on January 1, 2017, and Prestea Underground achieved commercial production on February 1, 2018.

Golden Star’s objective is to grow into a best-in-class, mid-tier gold producer. We aim to expand the Company and its production profile through the exploration and development of our existing mines, particularly Wassa, and through strategic value accretive acquisitions.

As the winner of the Prospectors & Developers Association of Canada’s 2018 Environmental and Social Responsibility Award, we are committed to leaving a positive and sustainable legacy in the locations where we operate.

The Company is a reporting issuer or the equivalent in all provinces of Canada, in Ghana and in the United States, and files disclosure documents with securities regulatory authorities in Canada and Ghana, and with the SEC in the United States.

SUMMARY OF OPERATING AND FINANCIAL RESULTS

OPERATING SUMMARY		Three Months Ended December 31,		For the Years Ended December 31,	
		2019	2018	2019	2018
Wassa gold sold	oz	41,890	37,171	156,489	149,568
Prestea gold sold	oz	11,523	11,230	47,700	75,411
Total gold sold	oz	53,413	48,401	204,189	224,979
Wassa gold produced	oz	41,335	37,562	156,166	149,697
Prestea gold produced	oz	11,336	11,284	47,603	75,087
Total gold produced	oz	52,671	48,846	203,769	224,784
Average realized gold price ¹	\$/oz	1,410	1,185	1,342	1,225
Cost of sales per ounce - Consolidated ²	\$/oz	1,080	1,351	1,055	1,156
Cost of sales per ounce - Wassa ²	\$/oz	799	836	813	898
Cost of sales per ounce - Prestea ²	\$/oz	2,101	3,054	1,848	1,681
Cash operating cost per ounce - Consolidated ²	\$/oz	831	905	832	847
Cash operating cost per ounce - Wassa ²	\$/oz	615	614	633	629
Cash operating cost per ounce - Prestea ²	\$/oz	1,616	1,867	1,484	1,292
All-in sustaining cost per ounce - Consolidated ²	\$/oz	1,227	1,218	1,159	1,107
All-in sustaining cost per ounce - Wassa ²	\$/oz	959	933	922	886
All-in sustaining cost per ounce - Prestea ²	\$/oz	2,202	2,164	1,937	1,558

¹ Average realized gold price per ounce in the year ended December 31, 2018 excludes 2,049 pre-commercial production ounces sold at Prestea Underground in January 2018. Average realized gold price per ounce for the three months and year ended December 31, 2019 excludes a \$9.3 million non-cash cumulative adjustment to revenue related to the Streaming Agreement. See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment.

² See “Non-GAAP Financial Measures” section for a reconciliation of cost of sales per ounce, cash operating cost per ounce and all-in sustaining cost per ounce to cost of sales excluding depreciation and amortization.

FINANCIAL SUMMARY		Three Months Ended December 31,		For the Years Ended December 31,	
		2019	2018 ³	2019	2018 ³
Gold revenues	\$'000	66,061	57,339	264,737	273,017
Cost of sales excluding depreciation and amortization	\$'000	49,232	57,565	186,340	223,729
Depreciation and amortization	\$'000	8,464	7,824	29,054	33,939
Mine operating margin/(loss)	\$'000	8,365	(8,050)	49,343	15,349
General and administrative expense	\$'000	4,029	2,244	19,091	16,428
Loss/(gain) on fair value of financial instruments, net	\$'000	2,986	(3,274)	1,642	(6,786)
Impairment charges	\$'000	56,762	—	56,762	—
Income tax expense	\$'000	9,715	1,525	27,439	12,350
Net loss attributable to Golden Star shareholders	\$'000	(62,434)	(9,318)	(67,434)	(18,123)
Adjusted net income/(loss) attributable to Golden Star shareholders ¹	\$'000	5,975	(5,211)	17,910	(1,916)
Loss per share attributable to Golden Star shareholders - basic	\$/share	(0.57)	(0.09)	(0.62)	(0.21)
Loss per share attributable to Golden Star shareholders - diluted	\$/share	(0.57)	(0.09)	(0.62)	(0.21)
Adjusted income/(loss) per share attributable to Golden Star shareholders - basic ¹	\$/share	0.05	(0.05)	0.16	(0.02)
Cash provided by/(used in) operations	\$'000	13,111	(24,676)	22,841	(7,555)
Cash provided by/(used in) operations before working capital changes ²	\$'000	9,432	(9,416)	36,829	9,617
Cash provided by/(used in) operations per share - basic	\$/share	0.12	(0.23)	0.21	(0.09)
Cash provided by/(used in) operations before working capital changes per share - basic ²	\$/share	0.09	(0.09)	0.34	0.11
Capital expenditures	\$'000	26,296	15,280	73,381	46,834

¹ See “Non-GAAP Financial Measures” section for a reconciliation of adjusted net income/(loss) attributable to Golden Star shareholders and adjusted income/(loss) per share attributable to Golden Star shareholders-basic to net loss attributable to Golden Star shareholders.

² See “Non-GAAP Financial Measures” section for an explanation of the calculation of cash provided by/(used in) operations before working capital changes and cash provided by/(used in) operations before working capital changes per share - basic.

³ Per share data has been re-stated to reflect the share consolidation that was implemented on October 30, 2018.

- **Gold revenue totaled \$66.1 million in the fourth quarter of 2019, \$8.7 million higher than \$57.3 million in the same period in 2018.** The \$8.7 million increase consists of a \$18.0 million increase due to a 19% increase in the consolidated average realized gold price and a 10% increase in gold sold, offset by a \$9.3 million non-cash cumulative adjustment to revenue related to the Streaming Agreement. See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment. Excluding the \$9.3 million non-cash adjustment, gold revenue generated from Prestea increased 22% mainly due to a 19% increase in average realized gold price as gold sold was consistent with the same period in 2018. Gold revenue generated from Wassa increased by 34% due to a 19% increase in average realized gold price and a 13% increase in gold sold as a result of a 15% increase in underground gold sold as compared to the prior year. For the year ended December 31, 2019, gold revenue was \$264.7 million, \$8.3 million lower than \$273.0 million in 2018. The \$8.3 million decrease was mainly due to a \$9.3 million non-cash adjustment to deferred revenue recognized due to a remeasurement of the accounting for the Streaming Agreement related to prior periods, offset by a \$1.0 million increase due primarily to increased gold production from Wassa Underground, offset by a decrease in gold revenue at Prestea. Excluding the \$9.3 million non-cash adjustment, gold revenue totaled \$274.0 million, a slight increase compared to \$273.0 million in 2018.
- **Gold sales totaled 53,413 ounces in the fourth quarter of 2019, compared to 48,401 ounces sold in the same period in 2018.** Prestea gold sales of 11,523 ounces in the fourth quarter of 2019 were 3% higher than the same period in 2018. Wassa gold sales of 41,890 ounces in the fourth quarter of 2019 were 13% higher than the same period in 2018 as a result of a 13% increase in underground ore processed. For the year ended December 31, 2019, gold sales of 204,189 ounces were 9% lower than the 224,979 ounces sold in 2018 due to a decrease in production at Prestea as a result of the planned reduction from the Prestea Open Pits and lower than planned head grade at Prestea Underground due to a combination of excessive dilution and ore loss. This was offset by a slight increase in production at Wassa which was primarily due to an increase in Wassa Underground tonnes mined and processed.
- **Cost of sales excluding depreciation and amortization in the fourth quarter of 2019 totaled \$49.2 million compared to \$57.6 million in the same period in 2018.** Cost of sales excluding depreciation and amortization in the fourth quarter of 2019

decreased 14% compared to the same period in 2018 mainly due to a \$9.9 million decrease in severance charges. Severance charges of \$9.9 million in the same period in 2018 related to the Prestea improvement plan which included right-sizing the workforce at Prestea and optimizing the management and supervisory structure. Operating costs to metals inventory expense decreased \$1.1 million as Wassa drew down less on ore stockpiles during the period. Mine operating expenses increased \$1.7 million mainly due to higher costs associated with increased mining rates at Wassa Underground, offset by reduced production from the Prestea Open Pits. Royalty expense increased \$1.6 million due to higher gold revenue in the period as a result of a higher average realized gold price. For the year ended December 31, 2019, cost of sales excluding depreciation and amortization was \$186.3 million, a 17% decrease compared to \$223.7 million in the same period in 2018. The decrease is mainly due to a \$14.5 million decrease in severance charges as a result of the Prestea improvement plan in the prior year, a \$13.2 million decrease in operating costs from metal inventory, a \$17.7 million decrease in mine operating costs at Prestea as production decreased compared to the same period in 2018, and a \$4.4 million decrease in inventory net realizable value adjustments and write-offs primarily as a result of the materials and supplies inventories written off at Wassa in the prior period related to open pit mining.

- **Consolidated cost of sales per ounce was \$1,080 in the fourth quarter of 2019, 20% lower than \$1,351 in the same period in 2018. Consolidated cash operating cost per ounce was \$831 in the fourth quarter of 2019, 8% lower than \$905 in the same period in 2018.** Cash operating cost per ounce at Wassa in the fourth quarter of 2019 was \$615 per ounce consistent with \$614 per ounce in the same period in 2018 even though gold sold was higher compared to the same period in 2018 and mine operating expense increased due to an increase in total tonnes mined, as Wassa Underground has steadily increased its mining rates. Cash operating cost per ounce at Prestea decreased 13% from \$1,867 per ounce in the fourth quarter of 2018 to \$1,616 per ounce in the fourth quarter of 2019 due mainly to a decrease in mine operating expenses. Production rates at Prestea Underground continue to be lower than expected and have not been able to offset the lower production at the Prestea Open Pits as planned. For the year ended December 31, 2019, consolidated cash operating cost per ounce of \$832 decreased 8% from \$847 per ounce in 2018.
- **Depreciation and amortization expense totaled \$8.5 million in the fourth quarter of 2019 compared to \$7.8 million in the same period in 2018.** For the year ended December 31, 2019, depreciation and amortization expense was \$29.1 million, a 14% decrease from the \$33.9 million in 2018. The decrease in depreciation and amortization expense for the year ended December 31, 2019 was mainly due to a decrease at Wassa as a result of an increase in the total recoverable gold ounces over the life of mine of Wassa Underground.
- **General and administrative expense totaled \$4.0 million in the fourth quarter of 2019, compared to \$2.2 million in the same period in 2018.** The increase in general and administrative expense for the fourth quarter of 2019 was due primarily to an increase in share-based compensation expense compared to the same period in 2018. General and administrative expense, excluding share-based compensation totaled \$3.5 million compared to \$3.7 million in the same period in 2018. For the year ended December 31, 2019, general and administrative expense totaled \$19.1 million compared to \$16.4 million in the same period in 2018. The increase relates primarily to a \$1.8 million increase in share-based compensation expense compared to 2018.
- **Finance expense totaled \$2.8 million before a non-cash cumulative adjustment of \$6.2 million to interest on the financing component of deferred revenue related to the Streaming Agreement (\$3.4 million recovery after the adjustment) in the fourth quarter of 2019, compared to \$3.8 million in the same period in 2018.** See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment. Excluding the adjustment, finance expense decreased for the fourth quarter of 2019 compared to the same period in 2018. The decrease was due primarily to a \$0.4 million decrease in Ecobank loan interest and a \$1.8 million decrease in interest and accretion related to the Vendor Agreement (as defined below), as the Credit Facility proceeds were used to repay the Ecobank loans and Vendor Agreement. This decrease was partially offset by \$0.8 million of interest expense on the Credit Facility. For the three months ended December 31, 2019 a total of \$0.7 million in interest payments were made, compared to \$1.1 million in the same period in 2018. For the year ended December 31, 2019, finance expense totaled \$13.8 million before the adjustment to interest on the financing component of deferred revenue related to prior periods (\$7.6 million after the adjustment) compared to \$18.1 million in the same period in 2018. Excluding the adjustment, the decrease was mainly due to a \$2.0 million decrease in Royal Gold loan interest and amortization of Royal Gold loan financing fee as the loan was fully paid in the prior year, and a \$1.9 million decrease in interest and accretion related to the Vendor Agreement. For the year ended December 31, 2019, a total of \$7.1 million in interest payments were made, compared to \$7.9 million in 2018.
- **The Company recorded a loss of \$3.0 million on fair value of financial instruments in the fourth quarter of 2019 compared to a \$3.3 million gain in the same period in 2018.** The \$3.0 million loss consists of \$2.5 million related to a non-cash revaluation loss on the embedded derivative liability of the 7% Convertible Debentures and \$0.5 million related to a non-cash revaluation loss on the non-hedge derivative asset. The \$3.3 million fair value gain recognized in the fourth quarter of 2018 was related to a non-cash revaluation gain on the embedded derivative liability of the 7% Convertible Debentures. For the year ended December 31, 2019, the Company recorded a \$1.6 million loss on fair value of financial instruments,

compared to a \$6.8 million gain in the same period in 2018. The \$1.6 million loss consists of \$1.4 million related to a non-cash revaluation loss on the embedded derivative liability of the 7% Convertible Debentures and \$0.2 million related to a non-cash revaluation loss on the non-hedge derivative asset. The \$6.8 million gain in the same period in 2018 related to a non-cash revaluation gain on the embedded derivative liability of the 7% Convertible Debentures. The valuation techniques used for these financial instruments are disclosed in the “Financial Instruments” section of this MD&A.

- **Income tax expense was \$9.7 million in the fourth quarter of 2019 compared to \$1.5 million for the same period in 2018.** For the year ended December 31, 2019, income tax expense was \$27.4 million, compared to \$12.4 million in 2018. The increase in income tax expense for the quarter and year ended December 31, 2019 compared to the same periods in 2018 relates to the increase in mine operating margin at Wassa.
- **Other expense totaled \$7.0 million in the fourth quarter of 2019, compared to other income of \$1.5 million for the same period in 2018.** The \$8.4 million increase is primarily due to \$3.2 million of termination costs related to the relocation of the corporate office and changes in senior management in 2019 and \$4.7 million in mineral rights fees. The mineral rights fees relate to an assessment made by the Minerals Commission in Ghana for the years 2012 to 2018 for mineral rights fees due under the Minerals and Mining Regulations of 2012 not previously assessed. For the year ended December 31, 2019, other expenses totaled \$11.6 million compared to income of \$3.6 million in 2018. The \$15.2 million increase is mainly due to \$7.2 million of termination costs related to the relocation of the corporate office and changes in senior management in 2019, \$4.7 million in mineral rights fees, and a decrease in non-cash gain on the reduction of asset retirement obligations which created other income of \$3.1 million in 2018. The majority of the relocation and termination costs were accrued during the year ended December 31, 2019, therefore the Company expects lower charges to be incurred in 2020.
- **Net loss attributable to Golden Star shareholders for the fourth quarter of 2019 totaled \$62.4 million or \$0.57 loss per share (basic), compared to a net loss of \$9.3 million or \$0.09 loss per share (basic) in the same period in 2018.** The increase in net loss and loss per share attributable to Golden Star shareholders in the fourth quarter of 2019 was mainly due to a \$56.8 million increase in impairment charges, a \$8.2 million increase in income taxes, and a \$1.8 million increase in general and administrative expenses, offset by a \$16.4 million increase in mine operating margin. For the year ended December 31, 2019, net loss attributable to Golden Star shareholders totaled \$67.4 million or \$0.62 loss per share (basic), compared to a net loss of \$18.1 million or \$0.21 loss per share (basic) in the same period in 2018. The increase in loss is mainly due to a \$56.8 million increase in impairment charges, a \$15.1 million increase in income tax expense, a \$2.7 million increase in general and administration expenses, a \$15.2 million increase in other expense, offset by a \$34.0 million increase in mine operating margin. In the fourth quarter of 2019, the Company completed its annual budgeting process. Management observed a decrease in the Prestea mine’s cash flow reflecting adjustments to key mine planning, cost and working capital assumptions following the conclusion of the independent review of the underground operations at Prestea which resulted in a trigger for an impairment test, resulting in an impairment charge of \$56.8 million to the consolidated statement of operations and comprehensive loss and a reduction in the carrying value of Prestea’s assets.
- **Adjusted net income attributable to Golden Star shareholders (see “Non-GAAP Financial Measures” section) was \$6.0 million in the fourth quarter of 2019, compared to adjusted net loss attributable to Golden Star shareholders of \$5.2 million for the same period in 2018.** The increase in adjusted net income attributable to Golden Star shareholders for the fourth quarter of 2019 compared to the same period in 2018 was primarily due to a \$16.4 million increase in mine operating margin, offset by a \$8.4 million increase in other expense compared to the same period in 2018. For the year ended December 31, 2019, the adjusted net income attributable to Golden Star shareholders was \$17.9 million compared to \$1.9 million net loss for the same period in 2018. The increase in adjusted net income attributable to Golden Star shareholders was mainly due to a \$34.0 million increase in mine operating margin and decrease in finance expense, offset by an increase in general and administrative expenses (excluding share-based compensation), and \$15.2 million increase in other expense.
- **Cash provided by operations before working capital changes (see “Non-GAAP Financial Measures” section) was \$9.4 million for the fourth quarter of 2019, compared to \$9.4 million used in the same period in 2018.** The increase in cash provided by operations before working capital changes was due primarily to a \$16.4 million increase in mine operating margin. For the year ended December 31, 2019, cash provided by operations before working capital changes was \$36.8 million compared to \$9.6 million in the same period in 2018. The increase was primarily due to a \$34.0 million increase in mine operating margin, partially offset by an increase in consolidated general and administrative expense (excluding share-based compensation).
- **Capital expenditures for the fourth quarter of 2019 totaled \$26.3 million compared to \$15.3 million in the same period in 2018.** Capital expenditures at Wassa during the fourth quarter of 2019 comprised 83% of total capital expenditures and totaled \$21.7 million, which included \$5.4 million on the paste-fill plant, \$4.1 million on Wassa Underground capitalized development, \$4.4 million on mobile equipment, \$2.3 million on electrical upgrades, \$1.1 million on the pumping station, \$0.4 million on exploration drilling, \$0.3 million on the construction of a ventilation raise, \$0.4 million related to the tailings storage facility, and the remainder on other equipment and capital expenditures. Capital expenditures at Prestea during the

fourth quarter of 2019 comprised 17% of total capital expenditures and totaled \$4.4 million, which included \$3.7 million on sustaining capital related to Prestea Underground, and \$0.3 million on other equipment and capital expenditures.

OUTLOOK FOR 2020

Production and cost guidance

	Gold production	Cash operating costs	All-in sustaining costs
	thousands of ounces	\$ per ounce	\$ per ounce
Wassa	155 - 165	620 - 660	930 - 990
Prestea	40 - 45	1,400 - 1,550	1,650 - 1,850
Consolidated	195 - 210	790 - 850	1,080 - 1,180

Capital expenditure guidance

	Sustaining	Development	Total
	\$ millions	\$ millions	\$ millions
Wassa	23.0 - 25.0	19.0 - 21.0	42.0 - 46.0
Prestea	6.5 - 7.5	2.5 - 3.0	9.0 - 10.5
Exploration	—	3.5	3.5
Consolidated	29.5 - 32.5	25.0 - 27.5	54.5 - 60.0

CORPORATE DEVELOPMENTS

Impairment Charges

In the fourth quarter of 2019, the Company completed its annual budgeting process. Management observed a decrease in the Prestea mine's cash flow reflecting adjustments to key mine planning, cost and working capital assumptions following the conclusion of the independent review of the underground operations at Prestea which resulted in a trigger for an impairment test.

The recoverable amount of the Prestea CGU of \$nil was determined based on a discounted cash flow analysis of an indicative life of mine model. This life of mine model is management's best estimate of the recoverable amount of Prestea's assets at December 31, 2019.

The impairment test concluded that the recoverable amount of the Prestea CGU using a Value In Use model was lower than its carrying value as at December 31, 2019. This resulted in an impairment charge of \$56.8 million to the consolidated statement of operations and comprehensive loss and a reduction in the carrying value of Prestea's assets.

Key Assumptions:

The key assumptions used in determining the recoverable amount of the Prestea CGU include gold price, discount rate and life of mine.

	2019 Test
Assumptions	
Gold Price per oz - short term	\$1,435 - \$1,500
Gold Price per oz - long term	\$1,400
Discount Rate	7%
Life of Mine (years)	7

Changes in gold price and the discount rate assumptions can have a material impact on the recoverable value of each CGU. A significant change in gold prices will result in a reassessment of our life of mine plans, including the determination of reserves and resources which will impact on the recoverable amount of the CGUs.

The Company ran sensitivities at Prestea assuming a +/- \$100/oz price for gold as well as a +/- 1% change in the discount rate using the existing discounted cash flow model. Management concluded that an increase of \$100/oz over the life of the mine would

reduce the impairment charge to \$30.0 million. None of the other changes would have had a material impact on the impairment charge.

Gold Price - Management estimated gold prices by considering the average of the most recent market commodity price forecasts from a number of recognized financial analysts.

Discount rate - A pre-tax discount rate was based on the Company's estimated weighted average cost of capital.

Life of Mine - The life of mine was estimated using management's latest information including Prestea's latest reserves and resources estimates as well as information gathered from the independent operational review.

Revenue

Spot gold prices were \$1,515 per ounce at December 31, 2019, up from \$1,282 per ounce at December 31, 2018. Excluding the \$9.3 million non-cash cumulative adjustment to revenue related to the Streaming Agreement, the Company realized an average gold price of \$1,342 per ounce for gold sales during 2019, compared to an average realized gold price of \$1,225 per ounce in 2018. The spot gold price on February 17, 2020 was \$1,581 per ounce.

As the Company's Streaming Agreement contains a variable component, each time there is a significant change in the underlying total expected gold production of the Company's mines a cumulative catch-up adjustment to revenue is required. In 2019, the Company realized an adjustment to revenue and finance costs due to an increase in the Company's resource and reserve estimates related primarily to the Wassa mine. The result of the adjustment was to reduce revenue by \$9.3 million, reduce finance expense by \$6.2 million and increase deferred revenue by \$3.1 million.

Excluding the \$9.3 million non-cash cumulative adjustment, revenue from spot sales during the year ended December 31, 2019 resulted in an average realized gold price of 1,396 per ounce whereas revenue recognized from the gold purchase and sale agreement (the "Streaming Agreement") with RGLD Gold AG, a wholly-owned subsidiary of Royal Gold Inc., resulted in an average realized gold price of \$891 per ounce.

	For the Years Ended December 31, 2019		
	\$'000	Ounces	Realized price per ounce
Revenue - Stream arrangement			
Cash proceeds	\$ 6,027		
Deferred revenue recognized before cumulative catch-up adjustment	13,334		
	\$ 19,361	21,720	\$ 891
Revenue - Spot sales	254,638	182,469	1,396
Total	273,999	204,189	\$ 1,342

Changes to Executive Team and Relocation of Corporate Office

Andrew Wray was appointed President and Chief Executive Officer effective May 1, 2019, following Sam Coetzer's departure on April 30, 2019. Over the subsequent months, other changes were made:

- Graham Crew was appointed Executive Vice President and Chief Operating Officer effective July 8, 2019;
- Daniel Owiredu, the Company's Chief Operating Officer to July 7, 2019, served as the Company's President from July 8 to December 31, 2019 and, effective January 1, 2020, became Chairman of the Board of Directors of Golden Star (Wassa) Ltd. and of Golden Star (Bogoso/Prestea) Ltd.;
- Nathalie Lion Haddad, Executive Vice President, Head of People, joined Golden Star on September 16, 2019;
- Martin Raffield, formerly the Company's Executive Vice President, Chief Technical Officer, left the Company effective September 30, 2019;
- Peter Spora was appointed Executive Vice President, Growth & Discovery effective November 1, 2019;
- Philipa Varris, who had previously served as the Company's Vice President, Corporate Responsibility in Ghana, was appointed Executive Vice President, Head of Sustainability of Golden Star effective January 1, 2020; and
- Paul Thomson joined Golden Star on January 27, 2020 and was appointed Executive Vice President, Chief Financial Officer, following the transition of the Chief Financial Officer responsibilities from André van Niekerk.

As announced on October 22, 2019, the Company will be relocating its corporate office to London, England.

\$60 Million Secured Credit Facility

On October 17, 2019, the Company closed the \$60 million senior secured credit facility with Macquarie Bank Limited (the "Credit Facility") previously announced on July 31, 2019.

Golden Star used the proceeds to repay the Ecobank Loan III, Ecobank Loan IV, and the long-term payable under the Vendor Agreement with Volta River Authority (the "Vendor Agreement"). The remaining balance is available for general corporate purposes.

The Credit Facility is repayable in equal quarterly installments of \$5 million of principal, commencing on June 30, 2020. The final maturity date of the Credit Facility is March 31, 2023. The interest rate is 4.5% plus the applicable USD LIBOR rate. The Credit Facility is subject to normal course financial covenants including a Debt Service Coverage Ratio of greater than 1.20:1 and a Net Debt to EBITDA ratio of less than 3.00:1.

Consent to La Mancha to Acquire Additional Shares

On September 10, 2019, the Company announced that La Mancha Holding S.à.r.l. ("La Mancha") had requested its consent to La Mancha acquiring up to an additional 5% of the issued and outstanding common shares of the Company through ordinary market or block trade purchases.

The Investor Rights Agreement entered into between Golden Star and La Mancha on August 1, 2018, as amended on September 10, 2019, in connection with La Mancha's equity investment of US\$125.7 million to acquire a 30% stake in Golden Star, restricted La Mancha from acquiring any additional common shares beyond 30% until October 2020 without the prior consent of Golden Star. The Company consented to La Mancha acquiring up to an additional 5% of its issued and outstanding common shares for a total 35% investment in the Company.

Appointments to Board of Directors

On September 5, 2019, the Company announced that Ms. Ani Markova, MBA, CFA, CDID had been appointed to the Board of Directors. Ms. Markova replaced Graham Crew as a nominee of La Mancha on the Board of Directors following Mr. Crew's appointment as Chief Operating Officer of Golden Star.

On February 3, 2020, the Company announced that Karim Nasr had been appointed to the Board of Directors, replacing Naguib Sawiris as a nominee of La Mancha who stepped down from the Board given the range of other commitments which he has.

Gold Hedging Program

On August 8, 2019, the Company reported that the Company had established a discretionary gold price protection program (the "Hedging Program") to provide gold price protection for the projected production from the Prestea Mine over the next 12 months as the results of the ongoing operational review that has been implemented at the operation.

Zero cost collars, with a \$1,400/oz floor and a \$1,750/oz ceiling, have been put into place for 50,000 ounces of gold over a 12-month period. The gold hedges, arranged through Macquarie Bank Limited, will mature on a monthly basis at a frequency of approximately 4,167 ounces per month.

In the fourth quarter of 2019, the Company recognized an unrealized loss of \$0.2 million on the non-hedge accounted collar contracts.

Exploration Update

Wassa

During the fourth quarter, no surface drilling was performed at Wassa Underground mine. The 2019 exploration drilling program was completed in mid-September. The 2019 drilling programs at Wassa resulted in an additional 59 holes for approximately 45,000 metres. The additional surface and underground drilling is currently being validated and will be used to update the geological interpretations and subsequent resource models. The new geological interpretation is being used for mineral resource estimations that will be updated for year-end resource and reserve statements. The 2019 drilling at Wassa had three goals: conversion of Inferred Mineral Resources to Indicated Mineral Resources, definition drilling and the expansion of current Inferred Mineral Resources. The drilling successfully converted portions of the Inferred Mineral Resources to Indicated Mineral Resources and resulted in better defining mineralization at depth and within the hanging and footwall of the main B Shoot mineralization. Deeper drilling into the wide zones of mineralization at depth has shown that instead of a single high grade mineralized zone there are now four sub parallel zones. This new understanding will be incorporated into the year-end resource grade estimation.

Father Brown

Drilling was completed on the Father Brown project in Q2 2019 and totalled 28 holes for 14,500 metres. The drill results have been used to update a conceptual in-house resource model which in turn has been utilized by consultants to evaluate the potential economics of the project. The results of this concept study have shown that the current Indicated and Inferred Mineral Resource

at the Father Brown deposit has marginal economics. To progress toward a positive project decision, the project needs to improve the total grade endowment, ideally with higher grade material. The following steps will need to be carried out:

- Re-run grade estimate with high grade domain to reflect the higher than modelled grades observed in the Father Brown pit.
- Test ADK model with potential extensions and determine whether drilling to target these will deliver an attractive outcome.
- Rank Father Brown/ADK project against other development options (e.g. Wassa growth etc).

Prestea Underground

During the fourth quarter, no drilling was performed at Prestea Underground. For 2019, a total of 63 holes were completed with 12,424 metres being drilled. Most of this drilling was infill drilling to the north of the existing stopes on 24 level. From this drilling, a new resource block model will be created to form the basis for a new mine plan.

Operational Review of Prestea

Following the completion of CSA Global's ("CSA") independent review and Phase 2 design, Prestea underground mine is progressing with the implementation of a revised mining plan. Other recommendations from the independent review are also progressing within Project Okode.

Extraction of the 17L - 21L has been redesigned for Long Hole Open Stoping ("LHOS") and development has commenced with the new design using conventional equipment. Orders have been placed to mechanise the LHOS zones including a development jumbo, long hole drill, an additional loader (scoop) and a small truck to haul material to 17L. The jumbo is expected to be delivered during the first half of 2020 and is expected to significantly improve development productivity. An operational readiness plan for the implementation of LHOS mining method is currently being implemented.

In the Alimak stoping area from 21L - 24L stopes have been redesigned to reduce the overall hanging wall span as recommended by CSA, this is achieved by reducing the height where possible to improve travel times and stope turnover rates. Where the height cannot be reduced due to lack of access, the strike length of the stopes has been reduced to improve stability. A slightly narrower Alimak platform is being trialled to reduce development dilution and is also expected to improve dilution as these trial stopes come into production. Ventilation connections have been completed on 24L enabling development focus to move to the set-up of stopes to the North and South of the current block.

Several other initiatives recommended by CSA and prioritised by the site team are being managed under Project Okode supported by a Project Manager and Operations Specialist as well as dedicated project teams on site. Some of these initiatives include increased drilling density for resource definition, overbreak controls, maintenance improvements, mine planning and mine design changes and various productivity improvements.

WASSA OPERATIONS

Golden Star (Wassa) Limited, a 90% owned subsidiary of the Company owns and operates the Wassa Complex. Wassa is located in the southwestern region of Ghana, approximately 35 kilometers northeast of the town of Tarkwa. In 2018, Golden Star operated the Wassa Main Pit (an open pit operation) and Wassa Underground (an underground operation). As of February 1, 2018, Wassa became an underground-only operation. Wassa has a non-refractory processing plant (the “Wassa processing plant”) consisting of a carbon-in-leach (“CIL”) system with a capacity of 2.7 million tonnes per annum. In the first half of 2018, ore from both the Wassa Main Pit and Wassa Underground was processed at the Wassa processing plant, while in the first half of 2019 ore from Wassa Underground and stockpiles were processed at the Wassa processing plant.

		Three Months Ended December 31,		For the Years Ended December 31,	
		2019	2018	2019	2018
WASSA FINANCIAL RESULTS					
Revenue	\$'000	53,551	44,109	203,820	183,078
Mine operating expenses	\$'000	26,182	22,044	98,722	86,916
Severance charges	\$'000	—	—	225	4,970
Royalties	\$'000	3,060	2,316	10,877	9,508
Operating costs (to)/from metals inventory	\$'000	(414)	789	299	7,184
Inventory net realizable value adjustment and write-off	\$'000	—	349	—	3,684
Cost of sales excluding depreciation and amortization	\$'000	28,828	25,498	110,123	112,262
Depreciation and amortization	\$'000	4,657	5,593	17,134	22,066
Mine operating margin	\$'000	20,066	13,018	76,563	48,750
Capital expenditures	\$'000	21,667	13,898	60,123	35,420
WASSA OPERATING RESULTS					
Ore mined - Main Pit	t	—	—	—	54,281
Ore mined - Underground	t	375,958	309,504	1,421,742	1,075,218
Ore mined - Total	t	375,958	309,504	1,421,742	1,129,499
Waste mined - Main Pit	t	—	—	—	72,538
Waste mined - Underground	t	121,861	89,288	363,004	309,265
Waste mined - Total	t	121,861	89,288	363,004	381,803
Ore processed - Main Pit/Stockpiles	t	40,282	92,211	160,581	525,666
Ore processed - Underground	t	349,133	309,504	1,387,905	1,075,218
Ore processed - Total	t	389,415	401,715	1,548,486	1,600,884
Grade processed - Main Pit/Stockpiles	g/t	0.68	0.66	0.65	0.76
Grade processed - Underground	g/t	3.78	3.80	3.57	4.18
Recovery	%	95.4	95.4	95.6	95.7
Gold produced - Main Pit/Stockpiles	oz	738	1,851	3,250	12,436
Gold produced - Underground	oz	40,597	35,711	152,916	137,261
Gold produced - Total	oz	41,335	37,562	156,166	149,697
Gold sold - Main Pit/Stockpiles	oz	738	1,460	3,250	12,307
Gold sold - Underground	oz	41,152	35,711	153,239	137,261
Gold sold - Total	oz	41,890	37,171	156,489	149,568
Cost of sales per ounce ¹	\$/oz	799	836	813	898
Cash operating cost per ounce ¹	\$/oz	615	614	633	629
All-in sustaining cost per ounce ¹	\$/oz	959	933	922	886

¹ See “Non-GAAP Financial Measures” section for a reconciliation of cost of sales per ounce, cash operating cost per ounce and all-in sustaining cost per ounce to cost of sales excluding depreciation and amortization.

For the three months ended December 31, 2019 compared to the three months ended December 31, 2018

Production

Gold production from Wassa was 41,335 ounces for the fourth quarter of 2019, a 10% increase from the 37,562 ounces produced during the same period in 2018. This increase in production was primarily due to an increase in underground tonnes mined in processed compared to the same period in 2018.

Wassa Underground

Wassa Underground produced 40,597 ounces of gold (or approximately 98% of Wassa's total production) in the fourth quarter of 2019, compared to 35,711 ounces in the same period in 2018 (or approximately 95% of Wassa's total production). This 14% increase in production was mainly due to a 21% increase in ore tonnes mined and 13% increase in ore tonnes processed, resulting from productivity improvements. Mining rates at Wassa Underground increased to approximately 4,090 tpd on average in the fourth quarter of 2019 compared to approximately 3,360 tpd in the same period in 2018. Underground ore processed increased 13% to 349,133 tonnes in the fourth quarter of 2019 compared to 309,504 tonnes in the same period in 2018.

Wassa Main Pit/Stockpiles

Wassa Main Pit produced 738 ounces of gold in the fourth quarter of 2019, compared to 1,851 ounces in the same period in 2018. This decrease in production is a result of a 56% decrease in stockpile ore tonnes processed, offset by a 3% increase in stockpile ore grade processed compared to the same period in 2018.

Gold revenue

Gold revenue for the fourth quarter of 2019 was \$53.6 million, \$9.4 million higher than \$44.1 million in the same period in 2018. The \$9.4 million increase consists of a \$15.1 million increase due mainly to an increase in gold sold and average realized price, offset by a \$5.7 million non-cash cumulative adjustment to revenue related to the Streaming Agreement. See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment. Gold sold increased 13% to 41,890 ounces for the fourth quarter of 2019, compared to 37,171 ounces in the same period in 2018. The increase was primarily due to an increase in underground tonnes mined and processed compared to the same period in 2018. The average realized gold price was \$1,413 per ounce for the fourth quarter of 2019 compared to \$1,187 per ounce in the same period in 2018. Excluding the \$5.7 million non-cash adjustment, gold revenue increased 34% from \$44.1 million in the same period in 2018.

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was \$28.8 million for the fourth quarter of 2019, compared to \$25.5 million for the same period in 2018. The increase was due primarily to a \$4.1 million increase in mine operating expenses, resulting from an increase in total tonnes mined, as Wassa Underground has steadily increased its mining rates, and a \$0.7 million increase in royalty expense due to higher gold revenue. Partially offsetting these increases was a \$1.2 million decrease in operating costs from metals inventory, and a \$0.3 million decrease in inventory net realizable value adjustment and write-off as materials and supplies inventories related to open pit mining were written off in the same period in 2018.

Depreciation and amortization

Depreciation and amortization expense decreased to \$4.7 million for the fourth quarter of 2019, compared to \$5.6 million for the same period in 2018 due mainly to an increase in the total recoverable gold ounces over the life of mine of Wassa Underground.

Costs per ounce

Cost of sales per ounce decreased 4% to \$799 for the fourth quarter of 2019 from \$836 in the same period in 2018. Cash operating cost per ounce remained consistent at \$615 compared to \$614 for the same period in 2018. All-in sustaining cost per ounce increased 3% to \$959 from \$933 for the same period in 2018 mainly due to an increase in sustaining capital expenditures.

Capital expenditures

Capital expenditures for the fourth quarter of 2019 totaled \$21.7 million compared with \$13.9 million incurred during the same period in 2018. The increase in capital expenditures was due primarily to a \$5.4 million increase related to the paste-fill plant, a \$4.2 million increase in mobile equipment, a \$2.3 million increase in electrical upgrades, and a \$1.1 million increase in the pumping station, offset by a \$4.1 million decrease in exploration drilling compared to the same period in 2018.

For the year ended December 31, 2019 compared to the year ended December 31, 2018

Production

Gold production from Wassa was 156,166 ounces for the year ended December 31, 2019, a 4% increase from the 149,697 ounces produced in 2018. This increase in production was due to the increase in tonnes mined and processed at the Wassa Underground mine compared to 2018. As of February 1, 2018, Wassa became an underground-only mining operation, however, open pit stock piled ore continued to be processed.

Wassa Underground

Wassa Underground produced 152,916 ounces of gold (or approximately 98% of Wassa's total production) for the year ended December 31, 2019, compared to 137,261 ounces in 2018 (or approximately 92% of Wassa's total production). This 11% increase in production was related to increased tonnes mined and processed, resulting from productivity improvements. This was partially offset by a 15% decrease in grade due to limited flexibility with the mine plan. Mining rates at Wassa Underground increased to approximately 3,900 tpd on average for the year ended December 31, 2019, compared to approximately 2,950 tpd in 2018. Ore processed increased 29% for the year ended December 31, 2019 to 1,387,905 tonnes compared to 1,075,218 tonnes in 2018.

Wassa Main Pit/Stockpiles

Wassa Main Pit produced 3,250 ounces for the year ended December 31, 2019, compared to 12,436 in the same period in 2018. This decrease in production is a result of a 69% decrease in stockpile ore tonnes processed and a 14% decrease in stockpile ore grade processed compared to the same period in 2018. Also, 54,281 ore tonnes were mined in the prior year.

Gold revenue

Gold revenue for the year ended December 31, 2019 was \$203.8 million, \$20.7 million higher than \$183.1 million in 2018. The \$20.7 million increase consists of a \$26.4 million increase due mainly to an increase in gold sold and average realized price, offset by a \$5.7 million non-cash cumulative adjustment to revenue related to the Streaming Agreement. See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment. Gold sold increased 5% to 156,489 ounces for the year ended December 31, 2019 compared to 149,568 ounces in 2018. The increase was primarily a result of increased gold production from Wassa Underground. The average realized gold price was \$1,339 per ounce for the year ended December 31, 2019 compared to \$1,224 per ounce in 2018. Excluding the \$5.7 million non-cash adjustment, gold revenue increased 14% from \$183.1 million in 2018.

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was \$110.1 million for the year ended December 31, 2019 compared to \$112.3 million in 2018. The decrease was due primarily to a \$4.7 million decrease in severance charges as suspension of the Wassa surface mining operation was completed in early 2018, a \$3.7 million decrease in inventory net realizable value adjustment and write-off as materials and supplies inventories related to open pit mining were written off in the same period in 2018, and a \$6.9 million decrease in operating costs from metals inventory due to a reduction in drawdown of ore stockpiles compared to the same period in 2018. Partially offsetting these decreases were a \$11.8 million increase in mine operating expenses, resulting from an increase in total tonnes mined, as Wassa Underground has steadily increased its mining rates and a \$1.4 million increase in royalty expense due to higher gold revenue.

Depreciation and amortization

Depreciation and amortization expense decreased to \$17.1 million for the year ended December 31, 2019 compared to \$22.1 million in 2018 due mainly to an increase in the total recoverable gold ounces over the life of mine of Wassa Underground.

Costs per ounce

Cost of sales per ounce decreased 9% to \$813 for the year ended December 31, 2019 compared to \$898 in 2018. Cash operating cost per ounce remained consistent at \$633 for the year ended December 31, 2019 compared to \$629 in 2018. All-in sustaining cost per ounce increased 4% to \$922 for the year ended December 31, 2019 from \$886 in 2018 mainly due to an increase in sustaining capital expenditures.

Capital expenditures

Capital expenditures for the year ended December 31, 2019 totaled \$60.1 million compared to \$35.4 million during 2018. The increase in capital expenditures is due primarily to an increase of \$8.2 million in exploration drilling, a \$7.0 million increase in the paste-fill plant, a \$4.2 million increase in mobile equipment, a \$2.4 million increase in electrical upgrades, a \$2.5 million increase in the pumping station, a \$2.2 million increase related to the construction of a ventilation raise and a \$2.5 million increase related to the tailing storage facility. Offsetting these increases was a \$1.7 million decrease in capitalized development related to a decrease in development meters compared to 2018.

PRESTEA OPERATIONS

Golden Star (Bogoso/Prestea) Limited, a 90% owned subsidiary of the Company owns and operates the Prestea Complex located near the town of Prestea, Ghana. The Prestea Complex consists of Prestea Underground (an underground operation), the Prestea Open Pits (neighboring open pits formed from oxide deposits) and associated support facilities. Prestea has a CIL processing facility with capacity of up to 1.5 million tonnes per annum, located 14 km away at Bogoso, which is suitable for treating non-refractory gold ore (the “non-refractory plant”). Ore from both Prestea Underground and the Prestea Open Pits is processed in the non-refractory plant. Prestea Underground achieved commercial production on February 1, 2018.

		Three Months Ended December 31,		For the Years Ended December 31,	
		2019	2018	2019	2018
PRESTEA FINANCIAL RESULTS					
Revenue	\$'000	12,510	13,230	60,917	89,939
Mine operating expenses	\$'000	18,549	20,982	71,427	89,112
Severance charges	\$'000	31	9,882	143	9,888
Royalties	\$'000	1,586	693	4,083	4,794
Operating costs from/(to) metals inventory	\$'000	73	(11)	(652)	5,702
Inventory net realizable value adjustment and write-off	\$'000	165	521	1,216	1,971
Cost of sales excluding depreciation and amortization	\$'000	20,404	32,067	76,217	111,467
Depreciation and amortization	\$'000	3,807	2,231	11,920	11,873
Mine operating loss	\$'000	(11,701)	(21,068)	(27,220)	(33,401)
Capital expenditures	\$'000	4,389	1,382	13,018	11,414
PRESTEA OPERATING RESULTS					
Ore mined - Open pits	t	112,419	32,275	493,924	374,218
Ore mined - Underground	t	34,426	29,654	152,330	128,048
Ore mined - Total	t	146,845	61,929	646,254	502,266
Waste mined - Open pits	t	207,322	89,638	749,660	921,054
Waste mined - Underground	t	9,111	3,008	17,446	7,403
Waste mined - Total	t	216,433	92,646	767,106	928,457
Ore processed - Open pits	t	117,404	185,014	567,119	1,179,414
Ore processed - Underground	t	34,426	24,168	152,330	122,562
Ore processed - Total	t	151,830	209,182	719,449	1,301,976
Grade processed - Open pits	g/t	1.45	1.01	1.56	1.20
Grade processed - Underground	g/t	6.87	8.56	5.58	10.12
Recovery	%	86.0	84.9	85.7	86.8
Gold produced - Open pits	oz	4,781	4,632	23,422	37,623
Gold produced - Underground	oz	6,555	6,652	24,181	37,464
Gold produced - Total	oz	11,336	11,284	47,603	75,087
Gold sold - Open pits	oz	4,871	4,578	23,422	37,947
Gold sold - Underground	oz	6,652	6,652	24,278	37,464
Gold sold - Total	oz	11,523	11,230	47,700	75,411
Cost of sales per ounce ¹	\$/oz	2,101	3,054	1,848	1,681
Cash operating cost per ounce ¹	\$/oz	1,616	1,867	1,484	1,292
All-in sustaining cost per ounce ¹	\$/oz	2,202	2,164	1,937	1,558

¹ See “Non-GAAP Financial Measures” section for a reconciliation of cost of sales per ounce, cash operating cost per ounce and all-in sustaining cost per ounce to cost of sales excluding depreciation and amortization.

For the three months ended December 31, 2019 compared to the three months ended December 31, 2018

Production

Gold production from Prestea was 11,336 ounces in the fourth quarter of 2019, consistent with the 11,284 ounces produced during the same period in 2018.

Prestea Open Pits

The Prestea Open Pits produced 4,781 ounces in the fourth quarter of 2019, compared to 4,632 ounces in the same period in 2018. The Prestea Open Pits were expected to complete gold production in 2019, however mining continued into the fourth quarter of 2019 with additional ore being sourced from the pits close to Bogoso. Production increased slightly in the fourth quarter of 2019 compared to the same period in 2018, as a result of a 44% increase in ore grade processed, offset by a 37% decrease in ore tonnes processed.

Prestea Underground

Prestea Underground produced 6,555 ounces in the fourth quarter of 2019 compared to 6,652 ounces in the same period in 2018 with the slight decrease resulting from a 20% decrease in ore grade processed, offset partially by a 42% increase in ore tonnes processed.

Gold revenue

Gold revenue for the fourth quarter of 2019 was \$12.5 million, \$0.7 million lower than \$13.2 million in the same period in 2018. The \$0.7 million decrease consists of a \$3.6 million non-cash cumulative adjustment to revenue related to the Streaming Agreement, offset by a \$2.9 million increase due mainly to an increase in average realized price. See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment. The average realized gold price increased 19% to \$1,399 per ounce for the fourth quarter of 2019 compared to \$1,178 per ounce for the same period in 2018. Excluding the \$3.6 million non-cash adjustment, gold revenue increased 22% from \$13.2 million in the same period of 2018.

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was \$20.4 million for the fourth quarter of 2019, compared to \$32.1 million for the same period in 2018. The decrease was due primarily to a \$9.9 million decrease in severance charges as the Prestea improvement plan was implemented in the same period in 2018, a \$2.4 million decrease in mine operating expenses related to less ore processed from Prestea Open Pits, and a \$0.4 million decrease inventory net realizable value adjustment and write-off, offset by a \$0.1 million increase in operating costs from metals inventory.

Depreciation and amortization

Depreciation and amortization expense increased to \$3.8 million for the fourth quarter of 2019, compared to \$2.2 million for the same period in 2018 due mainly to an adjustment for the year in fourth quarter of 2019.

Costs per ounce

Cost of sales per ounce decreased 31% to \$2,101 for the fourth quarter of 2019 from \$3,054 in the same period in 2018. Cash operating cost per ounce of \$1,616 decreased 13% from \$1,867 for the same period in 2018. The decrease in costs per ounce were primarily due to lower mine operating expenses. All-in sustaining cost per ounce increased 2% to \$2,202 from \$2,164 for the same period in 2018.

Capital expenditures

Capital expenditures for the fourth quarter of 2019 totaled \$4.4 million compared to \$1.4 million incurred during the same period in 2018. The increase relates primarily to an increase capitalized development.

For the year ended December 31, 2019 compared to the year ended December 31, 2018

Production

Gold production from Prestea was 47,603 ounces for the year ended December 31, 2019, a 37% decrease from the 75,087 ounces produced in 2018. This decrease in production was due primarily to the planned reduction from the Prestea Open Pits and the slower than expected ramp up at Prestea Underground.

Prestea Open Pits

The Prestea Open Pits produced 23,422 ounces for the year ended December 31, 2019, compared to 37,623 ounces in 2018. This decrease in production was planned, as the Prestea Open Pits were expected to complete gold production in 2018. Mining continued into the fourth quarter of 2019 with additional ore being sourced from the pits close to Bogoso.

Prestea Underground

Prestea Underground produced 24,181 ounces for the year ended December 31, 2019, compared to 37,464 ounces in 2018. Production decreased 35% compared to the same period in 2018, as a result of a 45% decrease in ore grade processed, offset partially by a 24% increase in ore tonnes processed. Production was affected by lower grade as a result of unplanned waste zones within the stopes and unplanned dilution.

Gold revenue

Gold revenue for the year ended December 31, 2019 was \$60.9 million, \$29.0 million lower than \$89.9 million in 2018. The \$29.0 million decrease consists of a \$3.6 million non-cash cumulative adjustment to revenue related to the Streaming Agreement, and a \$25.4 million decrease due to a decrease in gold sold, offset by an increase in average realized gold price. See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment. Gold sold decreased 37% to 47,700 ounces for the year ended December 31, 2019 compared to 75,411 ounces in 2018, as a result of a decrease in gold production from the Prestea Open Pits and Prestea Underground. The average realized gold price increased 10% to \$1,353 per ounce for the year ended December 31, 2019 compared to \$1,226 per ounce in 2018. Excluding the \$3.6 million non-cash adjustment, gold revenue decreased 28% from \$89.9 million in 2018

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was \$76.2 million for the year ended December 31, 2019, compared to \$111.5 million in 2018. The decrease was due primarily to a \$9.7 million decrease in severance charges as the Prestea improvement plan was implemented in the same period in 2018, a \$17.7 million decrease in mine operating expenses related to less production, and a \$6.4 million decrease in operating costs to metals inventory.

Depreciation and amortization

Depreciation and amortization expense for the year ended December 31, 2019 was \$11.9 million, consistent with 2018.

Costs per ounce

Cost of sales per ounce increased 10% to \$1,848 for the year ended December 31, 2019, compared to \$1,681 in 2018. Cash operating cost per ounce increased 15% to \$1,484 for the year ended December 31, 2019 compared to \$1,292 in 2018. All-in sustaining cost per ounce increased 24% to \$1,937 for the year ended December 31, 2019 compared to \$1,558 in 2018. The increase in cost per ounce was primarily due to the decrease in ounces sold for the year ended December 31, 2019 compared to 2018, offset slightly by a decrease in mine operating expenses.

Capital expenditures

Capital expenditures for the year ended December 31, 2019 totaled \$13.0 million, compared to \$11.4 million incurred in 2018. The increase relates primarily to an increase in capitalized development plant upgrade costs.

SUMMARIZED QUARTERLY FINANCIAL RESULTS

	Three Months Ended,							
	Q4 2019	Q3 2019	Q2 2019	Q1 2019	Q4 2018 ²	Q3 2018 ²	Q2 2018 ²	Q1 2018 ²
(Stated in thousands of U.S dollars except per share data)								
Revenues	\$ 66,061	\$ 69,504	\$ 61,915	\$ 67,257	\$ 57,339	\$ 67,738	\$ 77,121	\$ 70,819
Cost of sales excluding depreciation and amortization	49,232	46,798	46,506	43,804	57,565	48,873	57,717	59,574
Net (loss)/income	(69,359)	4,926	(10,882)	(2,659)	(11,894)	(4,222)	(7,560)	(395)
Net (loss)/income attributable to shareholders of Golden Star	(62,434)	5,960	(9,036)	(1,924)	(9,318)	(3,178)	(6,642)	1,015
Adjusted net income/(loss) attributable to Golden Star shareholders ¹	5,975	6,961	872	9,394	(5,211)	3,011	2,408	(2,124)
Net (loss)/income per share attributable to Golden Star shareholders - basic	(0.57)	0.05	(0.08)	(0.02)	(0.09)	(0.04)	(0.09)	0.01
Net (loss)/income per share attributable to Golden Star shareholders - diluted	(0.57)	0.02	(0.08)	(0.02)	(0.09)	(0.04)	(0.09)	(0.03)
Adjusted income/(loss) per share attributable to Golden Star shareholders - basic ¹	0.05	0.06	0.01	0.09	(0.05)	0.04	0.03	(0.03)

¹ See "Non-GAAP Financial Measures" section for a reconciliation of adjusted net income/(loss) attributable to Golden Star shareholders and adjusted income/(loss) per share attributable to Golden Star shareholders (basic) to net loss attributable to Golden Star shareholders.

² Per share quarterly financial information has been re-stated to reflect the share consolidation that was implemented on October 30, 2018.

SELECTED ANNUAL INFORMATION

(Stated in thousands of U.S. dollars except per share data)	As of December 31, 2019	As of December 31, 2018	As of December 31, 2017
Cash and cash equivalents	\$ 53,367	\$ 96,507	\$ 27,787
Working capital ¹	(16,557)	5,850	(61,563)
Total assets	374,060	417,987	360,389
Long-term financial liabilities	90,782	73,224	79,741
Equity/(deficit)	(32,123)	42,037	(41,754)

	For the years ended December 31,		
	2019	2018	2017
Revenue	264,737	273,017	315,497
Net (loss)/income attributable to Golden Star	(67,434)	(18,123)	38,771
(Loss)/income per share attributable to Golden Star shareholders - basic	(0.62)	(0.21)	0.52
(Loss)/income per share attributable to Golden Star shareholders - diluted	(0.62)	(0.21)	0.48

¹ Working Capital is calculated as Current Assets minus Current Liabilities as disclosed on the Consolidated Balance Sheet.

LIQUIDITY AND FINANCIAL CONDITION

The Company held \$53.4 million in cash and cash equivalents as at December 31, 2019 compared to \$96.5 million in cash and cash equivalents at December 31, 2018. During the year ended December 31, 2019, operations provided \$22.8 million, investing activities used \$67.4 million and financing activities provided \$1.4 million of cash.

Before working capital changes, operations provided \$36.8 million of operating cash flow during the year ended December 31, 2019, compared to \$9.6 million in the same period in 2018. Cash provided by operations before working capital changes increased primarily due to an increase in consolidated mine operating margin related to Wassa, as Wassa Underground gold sold increased compared to the same period in 2018.

Working capital used \$14.0 million during the year ended December 31, 2019, compared to \$17.2 million in the same period in 2018. The working capital changes included a \$0.8 million increase in accounts payable and accrued liabilities, a \$6.4 million decrease in other liability as the final amount owing on the Company's Performance Share Unit ("PSU") liability was paid in April 2019, a \$4.9 million increase in inventory, a \$3.3 million increase in accounts receivable, and a \$0.2 million increase in prepaids and other. Accounts payable and accrued liabilities increased slightly from \$78.5 million at December 31, 2018 to \$90.8 million at December 31, 2019.

Investing activities used \$67.4 million during the year ended December 31, 2019, which included \$17.3 million on exploration drilling, \$35.9 million on the development of Wassa Underground, \$9.7 million on the development of Prestea Underground and \$10.0 million on equipment purchases and other. Offsetting these capital expenditures was a \$1.5 million increase in accounts payable and deposits on mine equipment and material.

Financing activities provided \$1.4 million during the year ended December 31, 2019, compared to \$124.2 million in the same period in 2018. Financing activities were comprised of the \$57.4 million Credit Facility proceeds net of fees and \$1.3 million received on exercise of options, offset by \$57.2 million in principal repayments of the Ecobank loans and the Vendor Agreement.

LIQUIDITY OUTLOOK

As at December 31, 2019, the Company had \$53.4 million in cash and a working capital deficit of \$16.6 million, compared to \$96.5 million in cash and working capital of \$5.9 million at December 31, 2018.

The Company expects to incur \$54.5 to \$60.0 million on capital expenditures during 2020 of which \$25.0 to \$27.5 million is discretionary.

Based on the Company's cash balance together with the operating cash flow that the Company anticipates generating, the Company expects to have sufficient cash available to support its operations and mandatory expenditures for the next twelve months.

TABLE OF CONTRACTUAL OBLIGATIONS

As at December 31, 2019, the Company is committed to the following:

(Stated in thousands of U.S dollars)	Payment due by period				Total
	Less than 1 Year	1 to 3 years	4 to 5 years	More than 5 Years	
Accounts payable and accrued liabilities	\$ 90,842	\$ —	\$ —	\$ —	\$ 90,842
Debt ¹	15,987	92,031	5,607	254	113,879
Interest on long-term debt	7,378	7,321	150	5	14,854
Purchase obligations	17,318	—	—	—	17,318
Rehabilitation provisions ²	5,826	17,749	25,877	24,316	73,768
Total	137,351	117,101	31,634	24,575	310,661

¹ Includes the outstanding repayment amounts from the 7% Convertible Debentures maturing on August 15, 2021, finance leases and the Credit Facility.

² Rehabilitation provisions indicates the expected undiscounted cash flows for each period.

RELATED PARTY TRANSACTIONS

There were no material related party transactions for the year ended December 31, 2019 and 2018 other than compensation of key management personnel which is presented in Note 22 of the consolidated financial statements for the year ended December 31, 2019 and December 31, 2018. Key management personnel are defined as members of the Board of Directors and certain senior officers. Compensation of key management personnel are made on terms equivalent to those prevailing in an arm's length transaction.

OFF-BALANCE SHEET ARRANGEMENTS

The Company has no material off-balance sheet arrangements.

NON-GAAP FINANCIAL MEASURES

In this MD&A, we use the terms “cash operating cost”, “cash operating cost per ounce”, “all-in sustaining costs”, “all-in sustaining costs per ounce”, “adjusted net income/(loss) attributable to Golden Star shareholders”, “adjusted income/(loss) per share attributable to Golden Star shareholders - basic”, “cash provided by operations before working capital changes”, and “cash provided by operations before working capital changes per share - basic”.

“Cost of sales excluding depreciation and amortization” as found in the statements of operations includes all mine-site operating costs, including the costs of mining, ore processing, maintenance, work-in-process inventory changes, mine-site overhead as well as production taxes, royalties, severance charges and by-product credits, but excludes exploration costs, property holding costs, corporate office general and administrative expenses, foreign currency gains and losses, gains and losses on asset sales, interest expense, gains and losses on derivatives, gains and losses on investments and income tax expense/benefit.

“Cost of sales per ounce” is equal to cost of sales excluding depreciation and amortization for the period plus depreciation and amortization for the period divided by the number of ounces of gold sold (excluding pre-commercial production ounces sold) during the period.

“Cash operating cost” for a period is equal to “cost of sales excluding depreciation and amortization” for the period less royalties, the cash component of metals inventory net realizable value adjustments, materials and supplies write-off and severance charges, and “cash operating cost per ounce” is that amount divided by the number of ounces of gold sold (excluding pre-commercial production ounces sold) during the period. We use cash operating cost per ounce as a key operating metric. We monitor this measure monthly, comparing each month's values to prior periods' values to detect trends that may indicate increases or decreases in operating efficiencies. We provide this measure to investors to allow them to also monitor operational efficiencies of the Company's mines. We calculate this measure for both individual operating units and on a consolidated basis. Since cash operating costs do not incorporate revenues, changes in working capital or non-operating cash costs, they are not necessarily indicative of operating profit or cash flow from operations as determined under IFRS. Changes in numerous factors including, but not limited to, mining rates, milling rates, ore grade, gold recovery, costs of labor, consumables and mine site general and administrative activities can cause these measures to increase or decrease. We believe that these measures are similar to the measures of other gold mining companies, but may not be comparable to similarly titled measures in every instance.

“All-in sustaining costs” commences with cash operating costs and then adds the cash component of metals inventory net realizable value adjustments, royalties, sustaining capital expenditures, corporate general and administrative costs (excluding share-based compensation expenses and severance), and accretion of rehabilitation provision. For mine site all-in sustaining costs, corporate general and administrative costs (excluding share-based compensation expenses and severance) are allocated based on gold sold by each operation. “All-in sustaining costs per ounce” is that amount divided by the number of ounces of gold sold (excluding pre-commercial production ounces sold) during the period. This measure seeks to represent the total costs of producing gold from current operations, and therefore it does not include capital expenditures attributable to projects or mine expansions, exploration and evaluation costs attributable to growth projects, income tax payments, interest costs or dividend payments. Consequently, this measure is not representative of all of the Company's cash expenditures. In addition, the calculation of all-in sustaining costs does not include depreciation expense as it does not reflect the impact of expenditures incurred in prior periods. Therefore, it is not indicative of the Company's overall profitability. Share-based compensation expenses are also excluded from the calculation of all-in sustaining costs as the Company believes that such expenses may not be representative of the actual payout on equity and liability-based awards.

The Company believes that “all-in sustaining costs” will better meet the needs of analysts, investors and other stakeholders of the Company in understanding the costs associated with producing gold, understanding the economics of gold mining, assessing the operating performance and the Company's ability to generate free cash flow from current operations and to generate free cash flow on an overall Company basis. Due to the capital intensive nature of the industry and the long useful lives over which these items are depreciated, there can be a disconnect between net earnings calculated in accordance with IFRS and the amount of free cash flow that is being generated by a mine. In the current market environment for gold mining equities, many investors and analysts are more focused on the ability of gold mining companies to generate free cash flow from current operations, and consequently the Company believes these measures are useful non-IFRS operating metrics (“non-GAAP measures”) and supplement the IFRS disclosures made by the Company. These measures are not representative of all of Golden Star's cash expenditures as they do not include income tax payments or interest costs. Non-GAAP measures are intended to provide additional information only and do not have standardized definitions under IFRS and should not be considered in isolation or as a substitute for measures of performance prepared in accordance with IFRS. These measures are not necessarily indicative of operating profit or cash flow from operations as determined under IFRS. The table below reconciles these non-GAAP measures to the most directly comparable IFRS measures and, where applicable, previous periods have been recalculated to conform to the current definition.

The table below reconciles consolidated cost of sales excluding depreciation and amortization to cost of sales per ounce, cash operating cost per ounce and all-in sustaining cost per ounce:

	Three Months Ended December 31,		For the Years Ended December 31,	
	2019	2018	2019	2018
(Stated in thousands of U.S dollars except cost per ounce data)				
Cost of sales excluding depreciation and amortization	49,232	57,565	186,340	223,729
Depreciation and amortization	8,464	7,824	29,054	33,939
Cost of sales	<u>57,696</u>	<u>65,389</u>	<u>215,394</u>	<u>257,668</u>
Cost of sales excluding depreciation and amortization	49,232	57,565	186,340	223,729
Severance charges	(31)	(9,882)	(368)	(14,858)
Royalties	(4,646)	(3,009)	(14,960)	(14,302)
Inventory net realizable value adjustment and write-off	(165)	(870)	(1,216)	(5,655)
Cash operating costs	<u>44,390</u>	<u>43,804</u>	<u>169,796</u>	<u>188,914</u>
Royalties	4,646	3,009	14,960	14,302
Inventory net realizable value adjustment and write-off	165	870	1,216	5,655
Accretion of rehabilitation provision	184	173	730	691
General and administrative costs, excluding share-based compensation	3,528	3,712	15,972	15,150
Sustaining capital expenditures	12,622	7,397	34,044	22,159
All-in sustaining costs	<u>65,535</u>	<u>58,965</u>	<u>236,718</u>	<u>246,871</u>
Ounces sold ¹	53,413	48,401	204,189	222,930
Cost of sales per ounce	\$ 1,080	\$ 1,351	\$ 1,055	\$ 1,156
Cash operating cost per ounce	\$ 831	\$ 905	\$ 832	\$ 847
All-in sustaining cost per ounce	\$ 1,227	\$ 1,218	\$ 1,159	\$ 1,107

¹ Ounces sold used in the calculation of cost of sales per ounce, cash operating cost per ounce and all-in sustaining cost per ounce excludes 2,049 pre-commercial production ounces sold at Prestea Underground in January 2018.

The tables below reconcile cost of sales excluding depreciation and amortization to cash operating cost per ounce for each of the operating mines:

	For the Three Months Ended December 31, 2019		
	Wassa	Prestea	Combined
(Stated in thousands of U.S dollars except cost per ounce data)			
Cost of sales excluding depreciation and amortization	28,828	20,404	49,232
Depreciation and amortization	4,657	3,807	8,464
Cost of sales	<u>33,485</u>	<u>24,211</u>	<u>57,696</u>
Cost of sales excluding depreciation and amortization	28,828	20,404	49,232
Severance charges	—	(31)	(31)
Royalties	(3,060)	(1,586)	(4,646)
Cash operating costs	<u>25,768</u>	<u>18,622</u>	<u>44,390</u>
Royalties	3,060	1,586	4,646
Accretion of rehabilitation provision	48	136	184
General and administrative costs, excluding share-based compensation	2,767	761	3,528
Sustaining capital expenditures	8,517	4,104	12,622
All-in sustaining costs	<u>40,160</u>	<u>25,375</u>	<u>65,535</u>
Ounces sold	41,890	11,523	53,413
Cost of sales per ounce	\$ 799	\$ 2,101	\$ 1,080
Cash operating cost per ounce	\$ 615	\$ 1,616	\$ 831
All-in sustaining cost per ounce	\$ 959	\$ 2,202	\$ 1,227

	For the For the Years Ended December 31, 2019		
	Wassa	Prestea	Combined
(Stated in thousands of U.S dollars except cost per ounce data)			
Cost of sales excluding depreciation and amortization	110,123	76,217	186,340
Depreciation and amortization	17,134	11,920	29,054
Cost of sales	<u>127,257</u>	<u>88,137</u>	<u>215,394</u>
Cost of sales excluding depreciation and amortization	110,123	76,217	186,340
Severance charges	(225)	(143)	(368)
Royalties	(10,877)	(4,083)	(14,960)
Inventory net realizable value adjustment and write-off	—	(1,216)	(1,216)
Cash operating costs	<u>99,021</u>	<u>70,775</u>	<u>169,796</u>
Royalties	10,877	4,083	14,960
Inventory net realizable value adjustment and write-off	—	1,216	1,216
Accretion of rehabilitation provision	191	539	730
General and administrative costs, excluding share-based compensation	12,241	3,731	15,972
Sustaining capital expenditures	22,014	12,031	34,044
All-in sustaining costs	<u>144,344</u>	<u>92,375</u>	<u>236,718</u>
Ounces sold	156,489	47,700	204,189
Cost of sales per ounce	\$ 813	\$ 1,848	\$ 1,055
Cash operating cost per ounce	\$ 633	\$ 1,484	\$ 832
All-in sustaining cost per ounce	\$ 922	\$ 1,937	\$ 1,159

	For the Three Months Ended December 31, 2018		
(Stated in thousands of U.S dollars except cost per ounce data)	Wassa	Prestea	Combined
Cost of sales excluding depreciation and amortization	25,498	32,067	57,565
Depreciation and amortization	5,593	2,231	7,824
Cost of sales	31,091	34,298	65,389
Cost of sales excluding depreciation and amortization	25,498	32,067	57,565
Severance charges	—	(9,882)	(9,882)
Royalties	(2,316)	(693)	(3,009)
Inventory net realizable value adjustment and write-off	(349)	(521)	(870)
Cash operating costs	22,833	20,971	43,804
Royalties	2,316	693	3,009
Inventory net realizable value adjustment and write-off	349	521	870
Accretion of rehabilitation provision	41	132	173
General and administrative costs, excluding share-based compensation	2,851	861	3,712
Sustaining capital expenditures	6,278	1,119	7,397
All-in sustaining costs	34,668	24,297	58,965
Ounces sold	37,171	11,230	48,401
Cost of sales per ounce	\$ 836	\$ 3,054	\$ 1,351
Cash operating cost per ounce	\$ 614	\$ 1,867	\$ 905
All-in sustaining cost per ounce	\$ 933	\$ 2,164	\$ 1,218

	For the For the Years Ended December 31, 2018		
(Stated in thousands of U.S dollars except cost per ounce data)	Wassa	Prestea	Combined
Cost of sales excluding depreciation and amortization	112,262	111,467	223,729
Depreciation and amortization	22,066	11,873	33,939
Cost of sales	134,328	123,340	257,668
Cost of sales excluding depreciation and amortization	112,262	111,467	223,729
Severance charges	(4,970)	(9,888)	(14,858)
Royalties	(9,508)	(4,794)	(14,302)
Inventory net realizable value adjustment and write-off	(3,684)	(1,971)	(5,655)
Cash operating costs	94,100	94,814	188,914
Royalties	9,508	4,794	14,302
Inventory net realizable value adjustment and write-off	3,684	1,971	5,655
Accretion of rehabilitation provision	163	528	691
General and administrative costs, excluding share-based compensation	10,072	5,078	15,150
Sustaining capital expenditures	15,062	7,097	22,159
All-in sustaining costs	132,589	114,282	246,871
Ounces sold ¹	149,568	73,362	222,930
Cost of sales per ounce	\$ 898	\$ 1,681	\$ 1,156
Cash operating cost per ounce	\$ 629	\$ 1,292	\$ 847
All-in sustaining cost per ounce	\$ 886	\$ 1,558	\$ 1,107

¹ Ounces sold used in the calculation of cost of sales per ounce and cash operating cost per ounce in the year ended December 31, 2018 excludes 2,049 pre-commercial production ounces sold at Prestea Underground in January 2018.

“Cash provided by operations before working capital changes” is calculated by subtracting the “changes in working capital” from “net cash provided by operating activities” as found in the statements of cash flows. “Cash provided by operations before working capital changes per share - basic” is “Cash provided by operations before working capital changes” divided by the basic weighted average number of shares outstanding for the period.

We use cash operating cost per ounce and cash provided by operations before working capital changes as key operating metrics. We monitor these measures monthly, comparing each month's values to the values in prior periods to detect trends that may indicate increases or decreases in operating efficiencies. These measures are also compared against budget to alert management of trends that may cause actual results to deviate from planned operational results. We provide these measures to investors to allow them to also monitor operational efficiencies of the mines owned by the Company.

Cash operating cost per ounce and cash provided by operations before working capital changes should be considered non-GAAP financial measures as defined in Canadian securities laws and should not be considered in isolation or as a substitute for measures of performance prepared in accordance with IFRS. There are material limitations associated with the use of such non-GAAP measures. Since these measures do not incorporate revenues, changes in working capital or non-operating cash costs, they are not necessarily indicative of operating profit or cash flow from operations as determined under IFRS. Changes in numerous factors including, but not limited to, mining rates, milling rates, ore grade, gold recovery, costs of labor, consumables and mine site general and administrative activities can cause these measures to increase or decrease. We believe that these measures are similar to the measures of other gold mining companies, but may not be comparable to similarly titled measures in every instance.

Adjusted net income/(loss) attributable to Golden Star shareholders

The table below shows the reconciliation of net loss attributable to Golden Star shareholders to adjusted net income/(loss) attributable to Golden Star shareholders and adjusted income/(loss) per share attributable to Golden Star shareholders:

	Three Months Ended December 31,		For the Years Ended December 31,	
	2019	2018	2019	2018
(Stated in thousands of U.S dollars except per share data)				
Net loss attributable to Golden Star shareholders	(62,434)	(9,318)	(67,434)	(18,123)
Add back/(deduct):				
Share-based compensation expense	501	(1,468)	3,119	1,278
Loss/(gain) on fair value of financial instruments	2,986	(3,274)	1,642	(6,786)
Severance charges	31	9,882	368	14,858
Corporate office relocation costs ¹	3,182	—	7,221	—
Gain on change in asset retirement obligations	(906)	(1,575)	(179)	(3,080)
Deferred income tax expense	9,298	1,525	21,148	12,350
Impairment charges	56,762	—	56,762	—
Variable consideration adjustment ²	3,073	—	3,073	—
	12,493	(4,228)	25,720	497
Adjustments attributable to non-controlling interest	(6,518)	(983)	(7,810)	(2,413)
Adjusted net income/(loss) attributable to Golden Star shareholders	5,975	(5,211)	17,910	(1,916)
Adjusted income/(loss) per share attributable to Golden Star shareholders - basic	\$ 0.05	\$ (0.05)	\$ 0.16	\$ (0.02)
Weighted average shares outstanding - basic (millions) ³	109.4	108.5	109.0	84.3

¹ Corporate office relocation costs includes termination costs related to the change in senior management and staff due to the planned relocation of the corporate office that were incurred in 2019.

² Cumulative adjustment to revenue and finance costs related to the Streaming Agreement. See Revenue discussion under Corporate Developments for an explanation of the non-cash cumulative adjustment.

³ Weighted average shares outstanding - basic has been re-stated to reflect the share consolidation that was implemented on October 30, 2018.

The Company uses “Adjusted net income/(loss) attributable to Golden Star shareholders” for its own internal purposes. Management’s internal budgets and forecasts and public guidance do not reflect the items which have been excluded from the determination of adjusted net income attributable to Golden Star shareholders. Consequently, the presentation of adjusted net income attributable to Golden Star shareholders enables shareholders to better understand the underlying operating performance of our core mining business through the eyes of management. Management periodically evaluates the components of adjusted net

earnings based on an internal assessment of performance measures that are useful for evaluating the operating performance of our business and a review of non-GAAP measures used by mining industry analysts and other mining companies.

“Adjusted net income/(loss) attributable to Golden Star shareholders - basic” is calculated by adjusting net loss attributable to Golden Star shareholders for share-based compensation expenses, gain/loss on fair value of financial instruments, severance charges, loss/gain on change in asset retirement obligations, deferred income tax expense, non-cash cumulative adjustment to revenue and finance costs related to the Streaming Agreement, and impairment. The Company has excluded the non-cash cumulative adjustment to revenue from adjusted net income/(loss) as the amount is non-recurring, the amount is non-cash in nature and management does not include the amount when reviewing and assessing the performance of the operations. “Adjusted income/(loss) per share attributable to Golden Star shareholders” for the period is “Adjusted net income/(loss) attributable to Golden Star shareholders” divided by the weighted average number of shares outstanding using the basic method of earnings per share.

Adjusted net income/(loss) attributable to Golden Star shareholders and adjusted income/(loss) per share attributable to Golden Star shareholders should be considered non-GAAP financial measures as defined in the Canadian securities laws and should not be considered in isolation or as a substitute for measures of performance prepared in accordance with GAAP. There are material limitations associated with the use of such non-GAAP measures. Since these measures do not incorporate all non-cash expense and income items, changes in working capital and non-operating cash costs, they are not necessarily indicative of operating profit or cash flow from operations as determined under IFRS. Changes in numerous factors including, but not limited to, our share price, risk-free interest rates, gold prices, mining rates, milling rates, ore grade, gold recovery, costs of labor, consumables and mine site general and administrative activities can cause these measures to increase or decrease. The Company believes that these measures are similar to the measures of other gold mining companies, but may not be comparable to similarly titled measures in every instance.

OUTSTANDING SHARE DATA

As of February 18, 2020, there were 109,551,361 common shares of the Company issued and outstanding, 3,632,583 stock options outstanding, 1,290,159 deferred share units outstanding, 568,064 share units of 2017 PRSUs outstanding and 7% Convertible Debentures which are convertible into an aggregate of 11,444,000 common shares.

CRITICAL ACCOUNTING JUDGMENTS, ESTIMATES AND ASSUMPTIONS

The critical accounting judgments, estimates and assumptions are disclosed in Note 4 of the audited consolidated financial statements for the year ended December 31, 2019.

CHANGES IN ACCOUNTING POLICIES

The Company has adopted the following new and revised standards, effective January 1, 2019. These changes were made in accordance with the applicable transitional provisions.

IFRS 16 *Leases* specifies how an IFRS reporter will recognize, measure, present and disclose leases. The standard provides a single lessee accounting model, requiring lessees to recognize assets and liabilities for all leases unless the lease term is twelve months or less or the underlying asset has a low value. Lessors continue to classify leases as operating or finance, with IFRS 16's approach to lessor accounting substantially unchanged from its predecessor, IAS 17. IFRS 16 was issued in January 2016 and applies to annual reporting periods beginning on or after January 1, 2019.

On January 1, 2019, the Company adopted the requirements of IFRS 16 *Leases*. As a result, the Company updated its accounting policy for leases to align with the requirements of IFRS 16. The Company elected to use the modified retrospective approach to initially adopt IFRS 16 which resulted in recognizing the cumulative effect of prior period amounts as an adjustment to the opening balance sheet through opening deficit on January 1, 2019.

Under IFRS 16, the Company recognized lease liabilities in relation to leases which had previously been classified as ‘operating leases’ under the principles of IAS 17 *Leases*. These liabilities were measured at the present value of the remaining lease payments, discounted using the lessee's incremental borrowing rate as of January 1, 2019. The weighted average lessee's incremental borrowing rate applied to the lease liabilities on January 1, 2019 was 7.5%.

The associated right-of-use assets for property leases were measured on a retrospective basis as if the new rules had always been applied. The change in accounting policy affected the following items in the balance sheet on January 1, 2019:

- Mining interests (plant and equipment) - increase of \$0.7 million
- Long term debt (finance leases) - increase of \$0.5 million

The net impact on retained earnings on January 1, 2019 was a decrease of \$0.1 million.

IFRIC 23 *Uncertainty over income tax treatments* clarifies how the recognition and measurement requirements of IAS 12, Income Taxes, are applied where there is uncertainty over income tax treatments effective for years beginning on or after January 1, 2019. There was no accounting impact to the financial statements on adoption of this standard.

FINANCIAL INSTRUMENTS

(Stated in thousands of U.S dollars)	Fair value at December 31, 2019	Basis of measurement	Associated risks
Cash and cash equivalents \$	53,367	Amortized cost	Interest/Credit/Foreign exchange
Accounts receivable	6,503	Amortized cost	Foreign exchange/Credit
Trade and other payables	83,061	Amortized cost	Foreign exchange/Interest
Finance leases	2,381	Amortized cost	Interest
7% Convertible Debentures	47,002	Amortized cost	Interest
Macquarie Credit Facility	57,386	Amortized cost	Interest
Long-term derivative liability	5,608	Fair value through profit and loss	Market price
Non-hedge derivative liability	211	Fair value through profit and loss	Market price

Amortized cost - Cash and cash equivalents, accounts receivable, trade and other payables, the 7% Convertible Debentures, the Credit Facility and the finance leases approximate their carrying values as the interest rates are comparable to current market rates.

Fair value through profit or loss - The fair value of the long-term derivative liability relating to the 7% Convertible Debentures is estimated using a convertible note valuation model. For the year ended December 31, 2019, a total loss of \$1.4 million was recorded to the statement of operations. The non-hedge derivative liability relating to collar contracts is estimated using pricing models that utilize a variety of observable inputs that are a combination of quoted prices, applicable yield curves and credit spreads. For the year ended December 31, 2019, the Company recognized an unrealized loss of \$0.2 million.

DISCLOSURES ABOUT RISKS

The Company's exposure to significant risks include, but are not limited to, the following risks: change in interest rates on our debt, change in foreign currency exchange rates, commodity price fluctuations, liquidity risk and credit risk. In recognition of the Company's outstanding accounts payable, the Company cannot guarantee that vendors or suppliers will not suspend or deny delivery of products or services to the Company.

In the fourth quarter of 2019, the Company completed its annual budgeting process. Management observed a decrease in the Prestea mine's cash flow reflecting adjustments to key mine planning, cost and working capital assumptions following the conclusion of the independent review of the underground operations at Prestea which resulted in a trigger for an impairment test, resulting in an impairment charge of \$56.8 million to the consolidated statement of operations and comprehensive loss and a reduction in the carrying value of Prestea's assets.

Possible adverse effects of the coronavirus outbreak on future operating results.

During January 2020, it was reported that there had been an outbreak of a new coronavirus in China. In an effort to halt the outbreak, the Chinese government has, among other things, placed significant restrictions on travel within China and closed businesses for several weeks. These disruptions could impact our suppliers (or those of our contractors) based in China, which in turn could adversely impact our operating results. In addition, any spread or escalation of the outbreak outside of China could also have an increased impact on our suppliers (or those of our contractors) in other parts of the world, and could generally result in a global economic slowdown, which in turn could adversely impact our operating results.

For a complete discussion of the risks, refer to the Company's Annual Information Form for the year ended December 31, 2018 available on the SEDAR website at www.sedar.com. Additional and/or updated risk factors, if applicable, will be included in our annual information form for the year ended December 31, 2019, which will be filed on SEDAR at www.sedar.com.

CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

The Company's management, with the participation of its President and Chief Executive Officer and Executive Vice President and Chief Financial Officer, has evaluated the effectiveness of the Company's disclosure controls and procedures. Based upon the

results of that evaluation, the Company's President and Chief Executive Officer and Executive Vice President and Chief Financial Officer have concluded that, as of December 31, 2019, the Company's disclosure controls and procedures were effective to provide reasonable assurance that the information required to be disclosed by the Company in reports it files is recorded, processed, summarized and reported, within the appropriate time periods and is accumulated and communicated to management, including the President and Chief Executive Officer and Executive Vice President and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Management's Report on Internal Control Over Financial Reporting

The Company's management, with the participation of its President and Chief Executive Officer and Executive Vice President and Chief Financial Officer, are responsible for establishing and maintaining adequate internal control over financial reporting. Under the supervision of the President and Chief Executive Officer and Executive Vice President and Chief Financial Officer, the Company's 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 IFRS. The Company's internal control over financial reporting includes policies and procedures that:

- pertain to the maintenance of records that accurately and fairly reflect, in reasonable detail, the transactions and dispositions of assets of the Company;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with IFRS and that the Company's receipts and expenditures are made only in accordance with authorizations of management and the Company's directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Company's assets that could have a material effect on the Company's consolidated financial statements.

The Company's management, including the President and Chief Executive Officer and Executive Vice President and Chief Financial Officer, believes that any disclosure controls and procedures or internal control over financial reporting, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, they cannot provide absolute assurance that all control issues and instances of fraud, if any, within the Company have been prevented or detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people, or by unauthorized override of the control. The design of any control system also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Accordingly, because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected.

Changes in Internal Control Over Financial Reporting

There has been no change in the Company's design of internal controls and procedures over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting during the period covered by this MD&A.

RISK FACTORS AND ADDITIONAL INFORMATION

The risk factors for the year ended December 31, 2019 are substantially the same as those disclosed and discussed under the headings "Risk Factors - General Risks", "Risk Factors - Governmental and Regulatory Risks" and "Risk Factors - Market Risks" in our annual information form for the year ended December 31, 2018. Additional and/or updated risk factors, if applicable, will be included in our annual information form for the year ended December 31, 2019, which will be filed on SEDAR at www.sedar.com.

**CERTIFICATION PURSUANT TO RULE 13a-14
OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED,
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES - OXLEY ACT OF 2002**

I, Andrew Wray, President and Chief Executive Officer of Golden Star Resources Ltd., certify the following:

1. I have reviewed this annual report on Form 40-F of Golden Star Resources Ltd.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the issuer as of, and for, the periods presented in this report;
4. The issuer's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the issuer and have:
 - A. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the issuer, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - B. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - C. Evaluated the effectiveness of the issuer's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - D. Disclosed in this report any change in the issuer's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the issuer's internal control over financial reporting; and
5. The issuer's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the issuer's auditors and the audit committee of the issuer's board of directors (or persons performing the equivalent functions):
 - A. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the issuer's ability to record, process, summarize and report financial information; and
 - B. Any fraud, whether or not material, that involves management or other employees who have a significant role in the issuer's internal control over financial reporting.

/s/ Andrew Wray

Andrew Wray
President and Chief Executive Officer

Toronto, Canada
March 27, 2020

**CERTIFICATION PURSUANT TO RULE 13a-14
OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED,
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES - OXLEY ACT OF 2002**

I, Paul Thomson, Executive Vice President and Chief Financial Officer of Golden Star Resources Ltd., certify the following:

1. I have reviewed this annual report on Form 40-F of Golden Star Resources Ltd.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the issuer as of, and for, the periods presented in this report;
4. The issuer's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the issuer and have:
 - A. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the issuer, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - B. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - C. Evaluated the effectiveness of the issuer's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - D. Disclosed in this report any change in the issuer's internal control over financial reporting that occurred during the period covered by the annual report that has materially affected, or is reasonably likely to materially affect, the issuer's internal control over financial reporting; and
5. The issuer's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the issuer's auditors and the audit committee of the issuer's board of directors (or persons performing the equivalent functions):
 - A. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the issuer's ability to record, process, summarize and report financial information; and
 - B. Any fraud, whether or not material, that involves management or other employees who have a significant role in the issuer's internal control over financial reporting.

/s/ Paul Thomson

Paul Thomson
Executive Vice President and Chief Financial Officer

Toronto, Canada
March 27, 2020

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES - OXLEY ACT OF 2002**

In connection with the annual report of Golden Star Resources Ltd. (the “Company”) on Form 40-F for the year ended December 31, 2019, Andrew Wray, President and Chief Executive Officer of Golden Star Resources Ltd., hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of his knowledge:

1. The annual report fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
2. The information contained in the annual report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Andrew Wray

Andrew Wray
President and Chief Executive Officer

Toronto, Canada
March 27, 2020

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES - OXLEY ACT OF 2002**

In connection with the annual report of Golden Star Resources Ltd. (the "Company") on Form 40-F for the year ended December 31, 2019, Paul Thomson, Executive Vice President and Chief Financial Officer of Golden Star Resources Ltd., hereby certifies, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of his knowledge:

1. The annual report fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and
2. The information contained in the annual report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Paul Thomson

Paul Thomson

Executive Vice President and Chief Financial Officer

Toronto, Canada

March 27, 2020

Consent of Independent Registered Public Accounting Firm

We hereby consent to the inclusion in this Annual Report on Form 40-F for the year ended December 31, 2019 of Golden Star Resources Ltd. of our report dated February 18, 2020, relating to the consolidated financial statements, and the effectiveness of internal control over financial reporting, which appears in this Annual Report.

We also consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-105820, 333-105821, 333-118958, 333-169047, 333-175542, 333-211926 and 333-218064) and Registration Statement on Form F-10 (No. 333-234005) of Golden Star Resources Ltd. of our report dated February 18, 2020 referred to above. We also consent to reference to us under the heading Interests of Experts, which appears in the Annual Information Form included in the Exhibit incorporated by reference in this Annual Report on Form 40-F, which is incorporated by reference in such Registration Statements.

(signed) "PricewaterhouseCoopers LLP"

Chartered Professional Accountants, Licensed Public Accountants

Toronto, Ontario
Canada

March 27, 2020

CONSENT OF QUALIFIED PERSON

Golden Star Resources Ltd.
United States Securities and Exchange Commission

Re: Golden Star Resources Ltd.

Ladies and Gentlemen:

I hereby consent to (i) being named and identified as a “qualified person” in connection with the following documents, which are either referenced in or filed as exhibits with the Annual Report on Form 40-F for the year ended December 31, 2019 (the “Form 40-F”) of Golden Star Resources Ltd. (the “Company”) to which this consent relates: (A) the Company’s Annual Information Form for the year ended December 31, 2019 and (B) the Company’s Management’s Discussion and Analysis for the year ended December 31, 2019 (ii) the inclusion or incorporation by reference of information derived from such documents in the Registration Statements on Forms S-8 (Nos. 333-218064, 333-211926, 333-175542, 333-169047, 333-118958, 333-105821 and 333-105820), as amended, and Registration Statement No. 333-234005 on Form F-10, as amended, or any related abbreviated registration statement filed by the Company with the Securities and Exchange Commission pursuant to Rule 462(b) under the Securities Act of 1933, as amended, or in any amendment to any of the foregoing, or to any prospectuses or amendments or supplements thereto and (iii) all other references to the undersigned included or incorporated by reference in the above-referenced Registration Statements and in any prospectuses or amendments or supplements thereto.

/s/ Matt Varvari —
Matt Varvari
Vice President, Technical Services

March 27, 2020

CONSENT OF QUALIFIED PERSON

Golden Star Resources Ltd.
United States Securities and Exchange Commission

Re: Golden Star Resources Ltd.

Ladies and Gentlemen:

I hereby consent to (i) being named and identified as a “qualified person” in connection with the following documents, which are either referenced in or filed as exhibits with the Annual Report on Form 40-F for the year ended December 31, 2019 (the “Form 40-F”) of Golden Star Resources Ltd. (the “Company”) to which this consent relates: (A) the Company’s Annual Information Form for the year ended December 31, 2019, (B) the Company’s Management’s Discussion and Analysis for the year ended December 31, 2019, (C) the technical report entitled “NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources, Wassa Gold Mine, Ghana” effective date December 31, 2018, and filed on June 24, 2019, and (D) the technical report entitled “NI 43-101 Technical Report on Resources and Reserves Golden Star Resources Ltd., Bogoso/Prestea Gold Mine, Ghana” effective date December 31, 2017, and filed on March 29, 2018, (ii) the inclusion or incorporation by reference of information derived from such documents in the Registration Statements on Forms S-8 (Nos. 333-218064, 333-211926, 333-175542, 333-169047, 333-118958, 333-105821 and 333-105820), as amended, and Registration Statement No. 333-234005 on Form F-10, as amended, or any related abbreviated registration statement filed by the Company with the Securities and Exchange Commission pursuant to Rule 462(b) under the Securities Act of 1933, as amended, or in any amendment to any of the foregoing, or to any prospectuses or amendments or supplements thereto and (iii) all other references to the undersigned included or incorporated by reference in the above-referenced Registration Statements and in any prospectuses or amendments or supplements thereto.

/s/ S. Mitchel Wasel _____
S. Mitchel Wasel
Vice President Exploration

March 27, 2020

CONSENT OF QUALIFIED PERSON

Golden Star Resources Ltd.
United States Securities and Exchange Commission

Re: Golden Star Resources Ltd.

Ladies and Gentlemen:

I hereby consent to (i) being named and identified as a “qualified person” in connection with the following documents, which are either referenced in or filed as exhibits with the Annual Report on Form 40-F for the year ended December 31, 2019 (the “Form 40-F”) of Golden Star Resources Ltd. (the “Company”) to which this consent relates: (A) the Company’s Annual Information Form for the year ended December 31, 2019, (B) the Company’s Management’s Discussion and Analysis for the year ended December 31, 2019, (C) the technical report entitled “NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources, Wassa Gold Mine, Ghana” effective date December 31, 2018, and filed on June 24, 2019, and (D) the technical report entitled “NI 43-101 Technical Report on Resources and Reserves Golden Star Resources Ltd., Bogoso/Prestea Gold Mine, Ghana” effective date December 31, 2017, and filed on March 29, 2018, (ii) the inclusion or incorporation by reference of information derived from such documents in the Registration Statements on Forms S-8 (Nos. 333-218064, 333-211926, 333-175542, 333-169047, 333-118958, 333-105821 and 333-105820), as amended, and Registration Statement No. 333-234005 on Form F-10, as amended, or any related abbreviated registration statement filed by the Company with the Securities and Exchange Commission pursuant to Rule 462(b) under the Securities Act of 1933, as amended, or in any amendment to any of the foregoing, or to any prospectuses or amendments or supplements thereto and (iii) all other references to the undersigned included or incorporated by reference in the above-referenced Registration Statements and in any prospectuses or amendments or supplements thereto.

/s/ Martin Raffield ___
Martin Raffield

March 27, 2020

CONSENT OF QUALIFIED PERSON

Golden Star Resources Ltd.
United States Securities and Exchange Commission

Re: Golden Star Resources Ltd.

Ladies and Gentlemen:

I hereby consent to (i) being named and identified as a “qualified person” in connection with the following documents, which are either referenced in or filed as exhibits with the Annual Report on Form 40-F for the year ended December 31, 2019 (the “Form 40-F”) of Golden Star Resources Ltd. (the “Company”) to which this consent relates: (A) the Company’s Annual Information Form for the year ended December 31, 2019, (B) the Company’s Management’s Discussion and Analysis for the year ended December 31, 2019, (C) the technical report entitled “NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources, Wassa Gold Mine, Ghana” effective date December 31, 2018, and filed on June 24, 2019, (ii) the inclusion or incorporation by reference of information derived from such documents in the Registration Statements on Forms S-8 (Nos. 333-218064, 333-211926, 333-175542, 333-169047, 333-118958, 333-105821 and 333-105820), as amended, and Registration Statement No. 333-234005 on Form F-10, as amended, or any related abbreviated registration statement filed by the Company with the Securities and Exchange Commission pursuant to Rule 462(b) under the Securities Act of 1933, as amended, or in any amendment to any of the foregoing, or to any prospectuses or amendments or supplements thereto and (iii) all other references to the undersigned included or incorporated by reference in the above-referenced Registration Statements and in any prospectuses or amendments or supplements thereto.

/s/ *Philipa Varris*

Philipa Varris
Executive Vice President, Head of Sustainability

March 27, 2020