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, 2018

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:

108,819,009

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. 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 2019; the timing for completion of mining from the Prestea open pits during 2019 and the processing of stockpiled ore therefrom; the mining rate and grade from Wassa Underground and the timing for accessing a higher grade area of the B-Shoot zone and larger stopes at Wassa Underground; the anticipated levels of sulphide minerals 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 down plunge extension of the high grade West Reef ore body at Prestea Underground and consequent achievement of increased annual production rate of 90,000 ounces and increased mine life from 5.5 years; the ongoing drilling programs in the 242 footwall underground target at Wassa 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; the granting of permits by the Government of Ghana in 2019 to permit exploration drilling on the Mansiso target; expansion drilling at Wassa Underground and Prestea Underground with a view to converting inferred mineral resources to indicated mineral resources; environmental impact of operations, including acid drainage generation and overall geochemical impact of mining the Prestea Underground West Reef stopes; completion, use and capacity of TSF2 (as defined in the "Wassa Gold Mine" section below); capital expenditures; government review of gold exploration areas; the mining laws, environmental laws and 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; geological, environmental, community and engineering studies; exploration efforts and activities; timing for commencing or completing drilling; 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 resource 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; and our ability to meet our cash requirements.

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 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, 2018 ("AIF") and Management's Discussion and Analysis of Financial Condition and Results of Operations for the year ended December 31, 2018 ("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 reserves 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;
- 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 or financing or in 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;
- possible litigation;
- availability of capital at reasonable rates or at all;
- risks related to indebtedness and the service of such indebtedness;
- changes in the Ghanaian Cedi and government policies regarding payments in foreign currency; 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 contained 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 get a better understanding of our operating environment. Golden Star does not undertake to update any forward-looking information and statements that are included in this Annual Report on Form 40-F, except in accordance with 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 28, 2019 as reported by the Bank of Canada for the conversion of Canadian dollars into United States dollars was Cdn$1.00 per $0.74 and the conversion of United States dollars was $1.00 per Cdn $1.34 .

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.

The Company prepares its Consolidated Financial Statements in accordance with International Financial Reporting Standards ("IFRS"), as issued by the International Accounting Standards Board. The audit of the consolidated financial statements are subject to the Rules of Professional Conduct of the Chartered Professional Accountants of Ontario, as well as the Standards of the Public Company Accounting Oversight Board (United States) (PCAOB) and independence standards of the SEC. IFRS differs in some significant respects from generally accepted accounting principles in the United States, and thus the consolidated financial statements may not be comparable to financial statements of United States companies.

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, 2018 . 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, 2018 , 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, 2018 , 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, 2018 .

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, 2018 , 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, 2018 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 Ethic 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, 2018 , 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, 2018
99.2	Management's Discussion and Analysis for the year ended December 31, 2018
99.3	Annual Consolidated Financial Statements for the year ended December 31, 2018, 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 Dr. Martin Raffield
99.10	Consent of S. Mitch Wasel
99.11	Consent of Michael Beare
99.12	Consent of Rod Redden
99.13	Consent of Neil Marshall
99.14	Consent of Chris Bray
99.15	Consent of Paul Riley

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/ P. André van Niekerk
P. André van Niekerk
Executive Vice President and Chief Financial Officer

March 29, 2019

GOLDEN STAR RESOURCES LTD.

Annual Information Form

For the Year Ended December 31, 2018

DATED: March 29, 2019

TABLE OF CONTENTS

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, 2018; 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.

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 2019; the timing for completion of mining from the Prestea open pits during 2019 and the processing of stockpiled ore therefrom; the mining rate and grade from Wassa Underground and the timing for accessing a higher grade area of the B-Shoot zone and larger stopes at Wassa Underground; the anticipated levels of sulphide minerals 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 down plunge extension of the high grade West Reef ore body at Prestea Underground and consequent achievement of increased annual production rate of 90,000 ounces and increased mine life from 5.5 years; the ongoing drilling programs in the 242 footwall underground target at Wassa 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; the granting of permits by the Government of Ghana in 2019 to permit exploration drilling on the Mansiso target; expansion drilling at Wassa Underground and Prestea Underground with a view to converting inferred mineral resources to indicated mineral resources; environmental impact of operations, including acid drainage generation and overall geochemical impact of mining the Prestea Underground West Reef stopes; completion, use and capacity of TSF2 (as defined in the "Wassa Gold Mine" section below); capital expenditures; government review of gold exploration areas; the mining laws, environmental laws and 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; geological, environmental, community and engineering studies; exploration efforts and activities; timing for commencing or completing drilling; 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 resource 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; and our ability to meet our cash requirements.

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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 reserves 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;
- 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 or financing or in 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;
- possible litigation;
- availability of capital at reasonable rates or at all;
- risks related to indebtedness and the service of such indebtedness;
- changes in the Ghanaian Cedi and government policies regarding payments in foreign currency; 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 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 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 Dr. Martin Raffield, Senior Vice-President, Project Development and Technical Services and Mitch Wasel, Vice-President, Exploration for Golden Star. Each of Dr. Raffield and Mr. Wasel is 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 mineral properties mentioned in this Annual Information Form that are considered to be material mineral properties to the Company 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, 2018, as reported by the Bank of Canada for the conversion of Canadian dollars into United States dollars was Cdn.$1.00 equals U.S.$ 0.7330 and for the conversion of United States dollars into Canadian dollars was U.S.$1.00 equals Cdn.$1.3642.

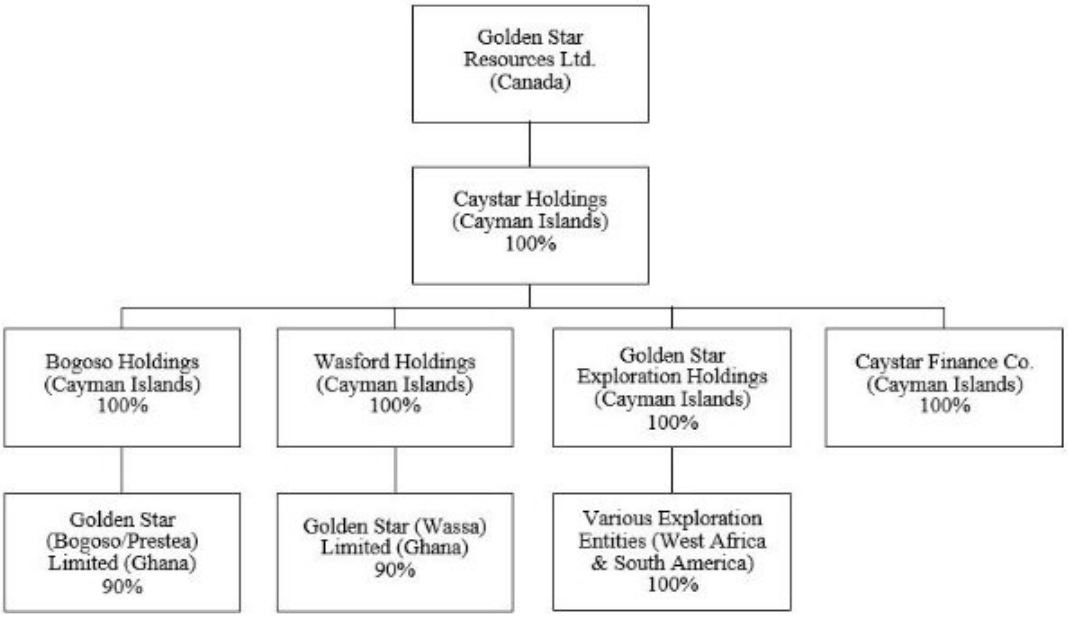
The following table sets forth, for 2018 and 2017, the high, low and average of the daily exchange rates for that year, each for Cdn.$1.00 dollar in terms of U.S. dollars as reported by the Bank of Canada.

	Year ended Dec. 31, 2018 (U.S. $)	**Year ended Dec. 31, 2017 (U.S. $)**
High……	0.8138	0.8245
Low……	0.7330	0.7276
Average……..	0.7721	0.7701

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, the common shares of the Company were consolidated on a one-for-two basis. All references to "common shares" in this document mean the common shares of the Company after the amalgamation and the share consolidation. Golden Star's principal and registered office is located at 150 King Street West, Suite 1200, Toronto, Ontario, M5H 1J9, Canada.

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



NOTE ON SHARE REFERENCES

In October of 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. 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 and the NYSE American 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 suspended since the third quarter of 2015). GSWL owns the Wassa property ("Wassa"), which contains the Wassa underground gold mine ("Wassa Underground"), as well as processing plants at each of Bogoso/Prestea and Wassa. Both GSBPL and GSWL are located in Ghana. In this AIF, 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 ends December 31. The Company is a reporting issuer or the equivalent in all provinces of Canada, in Ghana and in the United States, and file disclosure documents with securities regulatory authorities in Canada and Ghana and with the SEC.

THREE YEAR HISTORY

2016

On January 15, 2016, the Company filed a technical report entitled "NI 43-101 Technical Report on a Feasibility Study of the Prestea Underground Gold Project in Ghana".

On February 23, 2016, the Company announced its mineral reserves and mineral resources estimate as of December 31, 2015. The mineral reserves were 2.1 million ounces at a gold price assumption of $1,100 per ounce ("/oz"). The Company's measured and indicated mineral resources were 4.7 million ounces at a gold price assumption of $1,300/oz.

On May 4, 2016, the Company entered into an agreement with a significant current account creditor to settle $36.5 million of current liabilities. Under this agreement, the Company paid $12 million and deferred the remaining $24.5 million until January 2018, after which the outstanding balance will be repaid in equal installments over 24 months commencing in January 2018. Interest of 7.5% began to accrue and become payable beginning in January 2017.

On May 9, 2016, the Company completed a bought deal public equity offering with BMO Capital Markets pursuant to which the Company issued 4,550,000 common shares for gross proceeds of $15.0 million.

On July 12, 2016, the Company announced that pre-commercial production had commenced at Wassa Underground, effective July 10, 2016.

On August 3, 2016, the Company completed a public offering of 8,000,000 common shares at a price of $3.75 per share. The underwriters for the offering exercised in full their option to purchase an additional 1,200,000 common shares. As a result, a total of 9,200,000 common shares were sold by the Company for gross proceeds of $34.5 million. In addition, the Company completed a private placement of $65.0 million aggregate principal amount of 7.0% convertible senior notes due 2021 (the "7% Convertible Debentures"). As part of the offering of the 7% Convertible Debentures, the Company exchanged $42.0 million principal amount of its outstanding 5% convertible senior unsecured debentures due June 1, 2017 (the "5% Convertible Debentures"), for an equal principal amount of the 7% Convertible Debentures. The principal amount exchanged is included in the total aggregate principal amount of the 7% Convertible Debentures issued. The Company did not receive any cash proceeds from the exchange.

On August 17, 2016, the Company announced that it had repaid in full the remaining $22 million balance of the medium term loan facility entered into with Ecobank Ghana Limited ("Ecobank") in September 2014, using the proceeds from the financing transaction that closed on August 3, 2016.

On September 8, 2016, the Company announced it had appointed Manroc Developments Inc. ("Manroc") as the underground mining contractor for Prestea Underground. Manroc specializes in Alimak stoping, a mechanized shrinkage mining method, and has a reputation for safety and efficiency. Alimak stoping was selected as the mining method for Prestea Underground due to its safety and efficiency benefits over conventional shrinkage mining.

On October 27, 2016, the Company announced that it had received a mining lease for Mampon. Mampon is a high grade, oxide deposit, approximately 80 km to the north of the Company's carbon-in-leach processing plant at the Bogoso site. The Company was issued an environmental permit for Mampon on January 24, 2017.

During the fourth quarter of 2016, $5.0 million principal outstanding of the 7% Convertible Debentures were converted into 1,111,133 common shares.

2017

On January 6, 2017, the Company announced that commercial production had been achieved at Wassa Underground, effective January 1, 2017, and that project construction of Wassa Underground, including the installation of all ancillary infrastructure, was essentially complete and operational, in accordance with the Company's planned schedule and budget.

On January 17, 2017, 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.

On March 30, 2017, the Company announced that GSWL had signed a commitment letter for a $25 million secured loan facility ("Ecobank Loan III"). Ecobank Loan III is repayable within 60 months of initial drawdown. Interest on amounts drawn is payable monthly in arrears at an interest rate equal to three month LIBOR plus a spread of 8.0%.

On June 1, 2017, the Company announced that it had repaid the remaining $13.6 million principal amount of the 5% Convertible Debentures due June 1, 2017, plus accrued interest, in cash.

On September 29, 2017, the Company announced that stoping had commenced at Prestea Underground, with successful blasting of the initial ore from the first stope in the West Reef ore body taking place on September 27, 2017. The first stope is being mined using mechanized shrinkage, utilizing Alimak raise climbers, and ore will be hauled to surface for processing via the Central Shaft.

2018

On February 1, 2018, the Company announced that commercial production had been achieved at its Prestea Underground gold mine.

On March 27, 2018, 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/oz. The Company's measured and indicated mineral resources were 4.4 million ounces at a gold price assumption of $1,450/oz.

On March 28, 2018, the Company filed a technical report entitled "Technical Report on Resources and Reserves, Golden Star Resources, Bogoso/Prestea Gold Mine, Ghana".

On June 28, 2018, the Company announced that GSWL signed a commitment letter for a $20 million secured loan facility ("Ecobank Loan IV") with Ecobank. Ecobank Loan IV is repayable within 60 months of initial drawdown. Repayment of principal commenced September 2018 and is thereafter payable quarterly in arrears. Interest is payable monthly in arrears at an interest rate equal to 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 of this funding arrangement constitutes a stream transaction ("Stream Transaction") pursuant to which RGLD agreed to pay 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.

On October 1, 2018, 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. 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, Chief Executive Officer of La Mancha, and Graham Crew, La Mancha's second nominee, joined the Board effective October 1, 2018. The relationship secured the Company's platform for growth in Africa, while also strengthening the Company's balance sheet.

In October of 2018, 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 Toronto Stock Exchange and the NYSE American on October 30, 2018.

DESCRIPTION OF THE BUSINESS

GOLD SALES AND PRODUCTION

Golden Star produced 224,784 ounces of gold in 2018 and 267,565 ounces of gold in 2017. 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, the Company sold 9.25% of its total gold production to RGLD at 20% of the spot price. During 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. As of December 31, 2018, 78,461 ounces has been delivered to RGLD under the streaming agreement. Thereafter, 5.5% of production at a cash purchase price of 30% of spot gold will be delivered. (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.

Year	High	Low	Average	Average Price Received by Golden Star
2009	1213	810	972	978
2010	1,421	1058	1225	1219
2011	1,895	1319	1572	1564
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

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.

In October 2016, the Company was granted a mining lease for Mampon with a term of 10 years. Mampon is a high-grade oxide deposit located approximately 65 km to the north of the Company's CIL processing plant at the Bogoso/Prestea site. Ore mined from Mampon was blended with ore from the Prestea open pits and processed at the CIL processing plant at the Bogoso/Prestea site. The Company completed mining of the Mampon deposit in February 2018.

The Company's long-term objective is to continue the growth of its mining business through the appropriate development of lower operating cost projects. In the near term, the Company is focused on high grade, margin-focused projects, such as Wassa Underground and the Prestea Underground and exploring its existing properties for opportunities to expand the mineral reserves and extend the mine lives of both Wassa and Prestea through further drilling.

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 sale of the gold on the day it is shipped from the mine site and the Company receives payment for 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 its current customer would not materially delay or disrupt revenues.

Employees

As of December 31, 2018, Golden Star, including its majority-owned subsidiaries, had approximately 690 full time employees and approximately 576 contract employees, for a total of 1,266 a 18% decrease from approximately 901 full time and 640 contract employees at the end of 2017.

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, mining equipment, geologists, geophysicists and other experienced technical personnel.

Seasonality

All of the Company's operations are in tropical climates that experience annual rainy seasons. During periods when the Company is mining from 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 kilometres ("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 to 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 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 (Act 450) and the Minerals and Mining Act 2006 ("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 February 7, 2017, the Company received title opinions from Ghanaian counsel confirming that GSBPL or GSWL (as applicable) 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 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 from the Government of Ghana: (i) two mining leases over Bogoso dated August 21, 1987, and August 16, 1988, each for a term of 30 years, subject to renewal; (ii) three mining leases over Wassa, with the first lease dated September 17, 1992, for a term of 30 years, subject to renewal, and the two other leases (Hwini Butre and Benso) dated December 31, 2012, for a term of six years, subject to renewal; and (iii) one mining lease over Mampon, dated October 17, 2016, for a term of 10 years, subject to renewal. All mining leases are in good standing and the Company has lodged all required renewal documentation as required by law.

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) projects, 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 $1,104.4 million and $18.2 million, respectively, to Golden Star or its subsidiaries as of December 31, 2018, 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 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 (for additional information, see the management information circular of the Company dated March 11, 2019 filed under the Company's profile on the System for Electronic Document Analysis and Retrieval ("SEDAR") website at www.sedar.com). In addition, Mr. Sam Coetzer, 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 $14.3 million and $17.3 million in 2018 and 2017, respectively.

GHANAIAN CORPORATE TAX

The Ghana corporate income tax rate for 2018 for mining companies was 35%, which was unchanged from 2017. 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 2017. 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.

A new 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 entered into force. Changes resulting from the new ITA may impact the Company by accelerating the expiry of some of the Company's tax attributes.

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

In 2011, the Government established a renegotiation team to review the existing tax stability agreements of some major mining companies operating in Ghana. While the Company's mines do not have tax stability agreements, it is not clear at this time if the tax stability renegotiation team will review the Company's Deeds of Warranty which specify certain tax agreements for the Company's properties.

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 Minerals and Mining Act, 2006, 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, analysis, 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 generate 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 the Company's 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 2018 with most activity at the Mampon and Prestea South mining areas 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 $5.3 million, $6.0 million and $5.5 million in 2018, 2017 and 2016, respectively.

Golden Star was recognised by the Prospectors and Developers Association of Canada ("PDAC") at its 2018 gala awards ceremony with the PDAC Environmental and Social Responsibility Award. 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 2018, 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. In recognition of our long-running commitment to community development, the Golden Star Policy on Community Development and Support was operationalised in 2018 through the formalisation of a Standard for Facilitation and Discretionary Payments. 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 was recognised with the coveted Ghana Mining Industry Award for Best Performer in Corporate Social Investment for GSOPP in 2018. GSOPP now encompasses 1,133 hectares of plantations, employing 317 small holder or out-grower farmers, and over 430 contract workers. The majority of the plantations are now in fruiting maturity, with over 63,700 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

In addition to the Company projects, in 2018 Golden Star continued to participate in a number of partnership projects to expand capacity, and development opportunities for host communities. Under the Prevention is Better Than Cure partnership, Golden Star continued its collaboration with Deutsche Gesellschaft für Internationale Zusammenarbeit ("GIZ"), the Ghana Health Service ("GHS") and other private/public partners. In 2018, the Company conducted its second Helping Babies Breathe neonatal resuscitation train-the-trainer initiative under the partnership and with the support of Project C.U.R.E. During the two-week program, 72 health professionals were trained and provided with new-born resuscitation kits. Six master trainers were certified and subsequently trained a further 50 health professionals prior to year-end. Data provided by the Municipal Health Directorate reported an immediate impact, with a 25% decrease in neo-natal mortality recorded in just two quarters since the program inception.

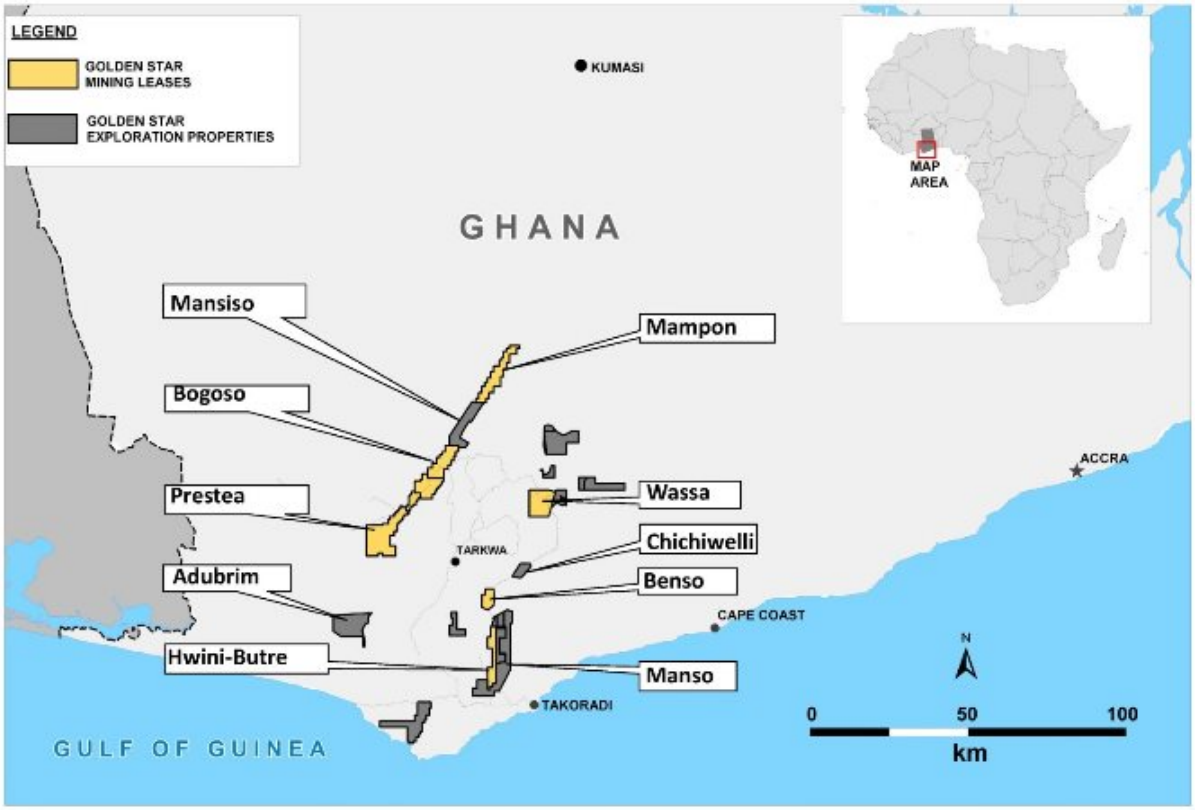
In 2018, the Company continued to focus on increasing local procurement participation and local content at its sites. A pilot initiative in the Company's Prestea operational area, with the objective of local value retention, incorporated a targeted identification of local business development opportunities, and capacity building. This program 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 2018 LOCOMS was recognised in the category of Mine Supplies and Services at the Ghana Mining Industry Awards and additionally had been invited to bid on international contracts. Since their inception, the LOCOMS companies have attracted over $27 million in goods and services value that previously would have been won by larger Accra-based or international mining services suppliers.

In 2018, Golden Star was recognised at the Ghana Mining Industry Awards in the category of Best Performer in Local Content. 50% of our employees and 74% of our contractors hail from our host communities. Of our workforce, 66% come from the Western Region of Ghana where our operations are located and 98% are Ghanaian.

DESCRIPTION OF THE PROPERTIES

MAP OF OPERATIONS AND PROPERTIES

The map below shows the locations of, among other mineral concessions, Bogoso/Prestea and Wassa. Golden Star's material 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, Dr. Martin Raffield and Mr. Mitch Wasel, each of whom is 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 a Feasibility Study of the Wassa open pit mine and underground project in Ghana" effective date December 31, 2014, and filed on May 8, 2015, and prepared by SRK Consulting ("SRK") under the supervision of Mike Beare, Rod Redden, Neil Marshall, Chris Bray and Paul Riley of SRK and S. Mitchel Wasel, each of whom is a QP for the purposes of NI 43-101 (the "Wassa Underground Feasibility Study"); 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 Martin Raffield and 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 million tonne ("Mt") per annum 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 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 as the Company deferred the next pushback, Cut 3, in light of the then-current gold price.

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, Daboase, 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 Mpohor.

Accessibility, Climate, Local Resources, Infrastructure and Physiography

The services, infrastructure, and community support required by the Wassa complex is already 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 will be 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 will be 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 permit 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 (± 293) millimetres ("mm"). The wettest month of the year is generally June, with an average rainfall of about 241 (± 85) mm, while January is the driest month of the year with an average rainfall of about 31 (± 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 20 th 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 m 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 Mt per annum 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 secured senior 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 metres wide.

The lithologies of the Wassa assemblage are predominantly comprised of mafic to intermediate volcanic flows which are interbedded with minor horizons of volcaniclastics, 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 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 419 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 longhole 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 2018 year end statements.

The drilling programs at Wassa will continue throughout 2019 continuing to step out and expand on the known inferred mineral resources as well as convert inferred mineral resources to indicated mineral resources.

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 and 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 drillhole 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 metre ("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 longhole 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 initiated 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 and will continue with both of these programs into 2019.

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 drillhole intersection based on experience from exploration drilling and mining. The hanging wall and footwall intersections can generally be easily recognised 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 the sample numbers are 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 testwork 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, testwork 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 testwork was undertaken by SGS in Cornwall, UK and the samples were delivered and logged in December 2014 with the initial phase of testwork completed and a draft report was issued in early April 2015.

By the end of 2018 a total of 1,944,728 tonnes of underground ore had been processed through the plant combined with open pit feed. 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.

Mining Operations

The Wassa Underground Feasibility Study was published in the second quarter of 2015 and considers continued mining of the Wassa open pit in combination with underground mining of economic mineralization. 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, Wassa Underground production was 137,261 ounces of gold.

The mining method used at the Wassa open pit is a conventional excavator and truck method typical for this type and style of gold mineralization. Drilling and blasting of ore and waste is conducted over bench heights of 6 m. Oxide or weathered ore is generally only required to be lightly blasted and in some areas can be excavated as ‘free dig’. Hydraulic excavators are used in conjunction with conventional blasting practice, to mine a 2.5 or 3.0 m flitch height. Broken rock is loaded to 95 t capacity off-highway haul trucks to a central stockpile or to the waste dump.

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 longhole open stoping 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 million tonnes per annum (“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 final deposition expected in the first half of 2019.

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 HDPE-lined, 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.

To satisfy the requirements of the Environmental Assessment Regulations, 1999 (LI 1652), an environmental management plan (an "EMP") for the years covering 2018 to 2020 was submitted to the EPA in December 2017. Under EPA Regulations, the previous EMP remains in force until the successive EMP is approved.

Capital Costs

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

			Total ($ millions)
Capital	Sustaining	Underground	50
		Open Pit	11
		Plant	35
		Surface	3
	Development	Underground	13
		Open Pit	117
		Plant	1
	Total capital		**231**

Operating Costs

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

Area	**Unit**	
Mining - open pit	$/t of total material mined	$3.35
Mining - underground	$/t of ore mined	$43.00
Processing	$/t of ore processed	$25.00 (underground only); $15.00 when open pit restarts
Site Admin.	$/t of ore processed	$12.00 (underground only); $5.00 when open pit restarts

Exploration and Development

The Wassa exploration objective for 2018 did not change from the previous year. There are two objectives, the first being drilling to expand indicated mineral resources in order to increase the supply of high grade, underground ore being fed to the Wassa processing plant in the near term. The second objective was to confirm that gold mineralization is continuous along strike, adding additional inferred mineral resources, which have the potential to be mined in the longer term.

Additional mineral resources delineated at Wassa Underground would give the Company the ability to increase near-term production. This is due to the twin decline and processing plant, which both have excess capacity, so it is anticipated Wassa Underground's production rate could be increased significantly without the need to incur substantial capital 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 is 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 has been on care and maintenance since its acquisition by Golden Star in 2002. 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 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 will be 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.

Manroc Developments Inc. ("Manroc") was selected following a competitive bid process, involving a number of mining contractors. Manroc specializes in Alimak stoping, a mechanized shrinkage mining method. Manroc's role will be to provide Alimak raise mining, stoping and equipment maintenance training to Golden Star personnel over a three year contract period.

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 will be disturbed for the Prestea Underground project and the project infrastructure will be in brownfields areas. The river ecosystems downstream of the project area 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 project:

- 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 will be carried out at the existing Bogoso/Prestea non-refractory processing facility, 16 km by road from Prestea;
- tailings storage will be in the existing Bogoso/Prestea storage facilities;
- any waste rock generated at the site will be 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 early 1990s and it was taken over by Sikaman Gold Resources Ltd, which subsequently sold its rights to Birim Goldfields Inc. ("BGI") in 1994. Bogoso Gold Limited ("BGL") entered into a joint venture with Hemlo Gold Mines Inc. ("HGM"). HGM 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 oz 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 20 year period of operating from 1935 to 1955, MGMAL produced over 900,000 oz of gold at an average recovered grade of 3.73 g/t Au.

Billiton Plc ("Billiton"), now known as BHP Billiton Limited, 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 has 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 50º. 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 50º and 70º. 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 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 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 have been reached with the land-owners, 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 foot prints 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.

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.

Exploration drilling in 2018 has been deferred pending the granting of Government permits which are expected in 2019. Once permits have been received, an initial reverse circulation drilling program will be conducted on the Mansiso target.

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 drillholes 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.

The 2018 exploration effort at Prestea was limited. A few surface holes were drilled between two historical shafts, Bondaye and Tuapim. Although the drilling intersected both the Main and West Reef structures, the thicknesses and grades were not enough to justify further drilling. Underground drilling at Prestea focused on stope definition drilling as the drill cuddy north of the current mining was not established until early 2019. Resource expansion drilling has been planned for January 2019 and was initiated in January with one rig drilling the extensions of mineralization to the 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 contains 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 type.

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 metres. 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. Intrusive-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 zone. 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 drillhole 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 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 sample and were given a zero grade. Generally core recovery was 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. Inferred mineral resource expansion drilling programs were initiated in 2019 and will continue throughout the year.

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 either SGS in Tarkwa or TWL which is also based in Tarkwa. Golden Star has used both laboratories and regularly submits quality control samples to each for testing purposes. Both laboratories are independent of Golden Star and are currently in the process of accreditation 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 surface or 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 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 is 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 metre. 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 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 are 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 are 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 testwork programs have been conducted on samples of mineralization from the PUG West Reef deposit. A metallurgical testwork 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.

The testwork supporting the current feasibility study commenced in 2013, when a different mining method (mechanized cut and fill) was being considered. That testwork was augmented with additional testwork conducted in 2015 in support of the current shrinkage mining feasibility study.

Mineral Reserve and Mineral Resources Estimates

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

Mining Operations

The planned life of mine production is 963 kt at an average grade of 10.2 g/t containing 316,000 ounces of gold from underground operations.

Prestea Underground consists of an underground mine with a production mine life of five years. The ore will be processed in the Bogoso/Prestea Plant which has been modified to accept low tonnage, high grade feed. The nominal mill feed rate will be approximately 240,000 tonnes per annum or 650 tonnes per day.

There is an extensive infrastructure of vertical shafts, inclined shafts, horizontal development, raises and stoping developed along the 9 km of strike length of the various orebodies from Prestea in the north to Tuapim in the south.

The project construction of Prestea Underground including the installation of all ancillary infrastructure was completed and operational by the end of the third quarter of 2017. Commercial production of the Prestea Underground was achieved on February 1, 2018. At full production, the planned mining rate is 650 tonnes per day (240 kt per year).

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 will be deposited on the currently operated Bogoso/Prestea storage facilities. The Bogoso/Prestea storage facilities are conventional valley/paddock tailings storage facilities.

The Company submitted the Environmental Impact Statement for 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 2,480 kg/a or 80,000 oz/a of gold at an overall recovery of 94%.

The processing facility at Bogoso consists two plants to 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
- Carbon-in-leach (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 will be deposited in the existing tailings storage facilities at Bogoso. GSBPL has two tailings storage facilities comprising 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 PUG 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 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

m^3/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 will 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 for the Prestea Underground West Reef are the EPA Environmental Permit and Mine Operating Plan with the Minerals Commission. The Mine Operating Plan has been submitted and approved and the EPA Environmental Permit has been invoiced (January 2018) and is pending permit issuance.

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 the Environment Services and the Community Relations and Social Responsibility Departments. 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 life of mine capital cost:

Area	Capital cost
Development	$1 million
Sustaining	$20 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	$120
Processing	$/t of ore processed	$70
Site Admin.	$/t of ore processed	$40

Exploration and Development

Several targets remain untested at depth below the current mine bottom, especially following the high grade down plunge trend, which could increase the project mineral resource base. Further definition drilling could convert some of the existing inferred

mineral resources to the indicated category, which will be a benefit for extending the mine life, if realized. Prestea Underground drilling resumed in 2017 when services and sufficient ventilation were established on 24 L. In early January 2017 the West Reef ore body was intersected on 24 L for the first time by Golden Star's mining operations in two separate cross cuts.

With respect to the extension drilling program, in the fourth quarter of 2018, the Company constructed a new drill chamber to the north of the current West Reef 24 Level access. This will enable the exploration team to access the larger, longer term exploration target, which is the projected down plunge extension of the high grade West Reef ore body. If this drilling is successful, it represents the potential to increase the mine's mineral reserves and mineral resources and consequently, its planned annual production rate of 90,000 ounces and the mine life from 5.5 years.

CONSOLIDATED MINERAL RESERVE AND MINERAL RESOURCE ESTIMATIONS

Consolidated Mineral Reserves

Mineral Reserves	Dec 31, 2018			Dec 31, 2018			Dec 31, 2018			Dec 31, 2017		
	Proven Mineral Reserve			Probable Mineral Reserve			Proven and Probable Mineral Reserve			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	12,254	1.30	512
Wassa Underground	834	4.55	122	6,647	3.87	827	7,481	3.95	949	4,899	4.11	647
Stockpiles	1,205	0.63	24	-	-	-	1,205	0.63	24	1,595	0.71	37
Subtotal Wassa	**2,039**	**2.23**	**146**	**16,567**	**2.49**	**1,327**	**18,606**	**2.46**	**1,473**	**18,748**	**1.98**	**1,196**
Mampon	-	-	-	-	-	-	-	-	-	105	2.23	8
Prestea South	-	-	-	-	-	-	-	-	-	103	1.80	6
Prestea Underground	37	9.07	11	789	12.04	305	826	11.91	316	1,165	12.35	463
Stockpiles	27	1.18	1	-	-	-	27	1.18	1	547	1.21	21
Subtotal Prestea	**64**	**5.74**	**12**	**789**	**12.04**	**305**	**853**	**11.57**	**317**	**1,920**	**8.06**	**497**
GSR Total	**2,103**	**2.34**	**158**	**17,356**	**2.93**	**1,632**	**19,459**	**2.86**	**1,790**	**20,668**	**2.55**	**1,693**

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 2018 mineral reserves were prepared under the supervision of Dr. Martin Raffield, Executive Vice President and Chief Technical Officer for the Company. Dr. Raffield is a QP as defined by NI 43-101.
4. The mineral reserves at December 31, 2018, were estimated using a gold price assumption of $1,250 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 7.0 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, 2018.

Measured and Indicated Mineral Resources	Dec 31, 2018 Measured Mineral Resources			Dec 31, 2018 Indicated Mineral Resources			Dec 31, 2018 Measured and Indicated Mineral Resources			Dec 31, 2017 Measured and Indicated Mineral Resources		
	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	0	0.00	0	28,042	1.39	1,254	28,042	1.39	1,254	26,652	1.32	1,134
Wassa Underground	593	5.66	108	11,914	4.21	1,613	12,507	4.28	1,721	13,003	4.10	1,713
Father Brown Adoikrom UG	0	0	0	981	7.54	238	981	7.54	238	1,242	5.84	233
Wassa Other	0	0	0	2,308	2.36	175	2,308	2.36	175	2,997	2.52	243
Subtotal Wassa	593	5.66	108	**43,246**	**2.36**	**3,281**	**43,839**	**2.40**	**3,388**	**43,894**	**2.35**	**3,323**
Bogoso/Prestea Refractory	0	0	0	17,677	2.85	1,619	17,677	2.85	1,619	17,809	2.84	1,625
Mampon	0	0	0	83	1.71	5	83	1.71	5	103	1.59	5
Prestea South	0	0	0	1,521	2.15	105	1,521	2.15	105	1,627	2.12	111
Prestea Underground	9	30.07	9	1,298	16.73	698	1,308	16.82	707	1,649	15.16	804
Bogoso/Prestea Other	0	0	0	2,387	1.66	128	2,387	1.66	128	2,414	1.65	128
Subtotal Bogoso/Prestea	9	30.07	9	**22,966**	**3.46**	**2,555**	**22,975**	**3.47**	**2,564**	**23,601**	**3.52**	**2,673**
Total	602	6.03	117	**66,212**	**2.74**	**5,836**	**66,814**	**2.77**	**5,952**	**67,495**	**2.76**	**5,996**
TOTAL NON REFRACTORY	602	6.03	117	**48,535**	**2.7**	**4,216**	**49,137**	**2.74**	**4,333**	**49,686**	**2.74**	**4,371**

Consolidated Inferred Mineral Resources

The table below presents Golden Star's consolidated inferred mineral resources for the year ended December 31, 2018.

	December 31, 2018 Inferred Mineral Resources			April 13, 2018 Inferred Mineral Resources		
	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)
Wassa Open Pit	23	0.74	1	91	1.16	3
Wassa Underground	50,661	3.65	5,945	44,909	3.57	5,153
Father Brown Adoikrom UG	2,313	6.38	475	1,506	5.08	246
Wassa Other	382	2.10	26	402	1.86	24
Subtotal Wassa	**53,379**	**3.76**	**6,446**	**46,908**	**3.60**	**5,426**
Mampon	14	1.68	1	14	1.68	1
Prestea South	68	1.89	4	68	1.89	4
Prestea Underground	2488	8.42	674	3,193	8.46	868
Bogoso/Prestea Others	468	1.50	23	470	1.50	23
Subtotal Bogoso/Prestea	**3,038**	**7.18**	**701**	**3,745**	**7.44**	**896**
Bogoso/Prestea Refractory	916	2.61	77	922	2.60	77
Total (including refractory)	**57,333**	**3.92**	**7,224**	**51,574**	**3.86**	**6,399**
TOTAL NON-REFRACTORY	**56,417**	**3.94**	**7,147**	**50,653**	**3.88**	**6,322**

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 $1,450 per ounce of gold pit shell using an economic gold grade cut-off of 2.1 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 $1,450 per ounce of gold pit shell using an economic gold grade cut-off of 3.2 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 $1,450 per ounce pit shell of Prestea South down to 3,800 metres elevation using a gold cut-off grade at 6.1 g/t Au.
5. Mineral resources were estimated using optimized pit shells at a gold price of $1,450 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

At December 31, 2018, the Company had current assets of $140.2 million and current liabilities of $134.4 million. Removing the non-cash deferred revenue current liability of $14.3 million, this resulted in a working capital of $20.1 million as at December 31, 2018. 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 with RGLD, the Company has pledged substantially all of its assets as security to Royal Gold and RGLD. 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. 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;
- halt or delay the development of new projects; 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 development projects because of declining gold prices could cause substantial delays or could interrupt development 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 $18.1 million in 2018, with a net income of $38.8 million attributable to Golden Star shareholders in 2017 and a net loss of $39.6 million attributable to Golden Star shareholders in 2016. 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, 2018, of $256.0 million, including $1.7 million in finance leases; $44.6 million ($51.5 million face value) pursuant to the Company's outstanding 7% Convertible Debentures; $37.6 million in term loans; $78.5 million of current trade payables and accrued liabilities; $16.8 million ($17.3 million face value) under a vendor agreement with a current account creditor; $66.2 million accrual for environmental rehabilitation liabilities; $6.4 million of other liabilities; and $4.2 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 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. If the 7% Convertible Debentures are converted by the holder before August 1, 2019, Golden Star will, in addition to the other consideration payable or deliverable in connection with such conversion, make a conversion 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 1, 2019, subject to certain limitations. Accordingly, upon a conversion of the 7% Convertible Debentures, including a conversion before August 1, 2019, holders of common shares may be subject to additional dilution and/or such conversion 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 or upon a fundamental change as described herein, 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, if 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 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 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.

As the Company transforms into an underground-only miner, 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 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 and the Term Loan, 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 is 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 did not enter into any hedging arrangements in 2018, but it may enter into additional hedging arrangements in 2019 and beyond. The Company's current and future hedging activities might not protect 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 dams;
- 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; 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 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 (including Prestea Underground) 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 Underground and Prestea Underground. 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 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.

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 the Company's mining operations. The use of contractors subjects Golden Star to certain risks, some of which are outside the Company's 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 contractors' workforce; 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. 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.

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.

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 Term Loan, 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 intent 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.

A new 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 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 changes which could have a significant impact on its business, results of operations or financial condition.

The Government of Ghana announced in February 2018 to 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 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.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 Ghana Environmental Protection Agency ("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 has occurred on the Company's properties, which 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 the NYSE American, 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 could cause the Company's securities to be delisted from NYSE American, 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 common shares 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 theses 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, Daniel Owiredu, Mona Quartey, Graham Crew, and Andrew Wray, each a director of the Company, and Naguib Sawiris, a proposed 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. taxpayers should consider that Golden Star may 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, 2018, 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, 2018, or any future year.

If the Company is a PFIC for any year, any person who holds the Company's common shares who is a U.S. person for U.S. income tax purposes (a "U.S. Holder") and whose holding period for those common shares 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. Gain 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 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 29, 2019, there were options outstanding to purchase up to 3,991,111 common shares at exercise prices ranging from Cdn.$1.90 to Cdn.$17.65 per share. In addition, 1,419,449 common shares are available for future issuance under the Company's equity based compensation plans. 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 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, 2018, there were 108,819,009 common shares issued and outstanding. As of March 29, 2019, 108,824,359 common shares were issued and outstanding.

The Company is also authorized to issue an unlimited number of first preferred shares. As at December 31, 2018, there were no first preferred shares issued and outstanding. As of March 29, 2019, 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

We are 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 have 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).

If the 7% Convertible Debentures are converted by the holder before August 1, 2019, Golden Star will, in addition to the other consideration payable or deliverable in connection with such conversion, make a conversion 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 1, 2019, subject to certain limitations.

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 the NYSE American under the symbol GSS and on the Ghana Stock Exchange under the symbol GSR. As of March 29, 2019, 108,824,359 common shares were outstanding.

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 the NYSE American during the financial year ending December 31, 2018.

TSX: GSC	Cdn$ High	Cdn$ Low	Cdn$ Close	Volume
January	5.50	4.90	5.00	1,208,800
February	5.00	4.35	4.50	1,091,200
March	4.45	3.80	3.80	638,700
April	4.75	3.65	4.65	1,572,600
May	4.65	4.45	4.55	2,366,800
June	4.60	4.20	4.50	1,569,900
July	4.65	4.25	4.65	2,904,200
August	5.00	4.45	4.75	3,627,200
September	5.15	4.55	4.75	1,282,800
October	4.95	4.45	4.64	1,789,700
November	4.32	3.39	3.96	840,900
December	4.34	3.53	4.34	1,417,000

NYSE American: GSS	US$ High	US$ Low	US$ Close	Volume
January	4.40	3.90	4.05	6,971,700
February	4.00	3.45	3.50	4,052,000
March	3.45	2.95	2.95	5,235,900
April	3.70	2.85	3.55	5,963,700
May	3.60	3.40	3.50	8,280,600
June	3.55	3.25	3.40	13,745,200
July	3.60	3.30	3.60	13,282,000
August	3.80	3.40	3.70	29,753,200
September	4.00	3.50	3.60	15,528,600
October	3.80	3.35	3.51	19,082,300
November	3.32	2.56	2.95	6,671,500
December	3.15	2.63	3.15	9,936,400

DIRECTORS AND OFFICERS

As of March 29, 2019, executive officers and directors of the Company beneficially owned, or controlled or directed, directly or indirectly, 469,215 common shares of the Company, representing approximately 0.4% 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, Ontario, Canada	January 1, 2013
SAMUEL T. COETZER, Ontario, Canada	December 13, 2012
GILMOUR CLAUSEN, Colorado, USA [3,5]	July 18, 2016
GRAHAM CREW, Western Australia, Australia [4,5]	October 1, 2018
ANU DHIR, Ontario, Canada [3,4]	February 21, 2014
ROBERT E. DOYLE, Ontario, Canada [1,2]	February 2, 2012
CRAIG J. NELSEN, Colorado, USA [1,3,5]	May 11, 2011
DANIEL OWIREDU, Greater Accra Region, Ghana	November 4, 2014
MONA QUARTEY, Accra, Ghana [2,4]	May 3, 2017
ANDREW WRAY, London, England [1,2]	October 1, 2018

Notes:

1. Member of the Compensation Committee
2. Member of the Audit Committee
3. Member of the Nominating and Corporate Governance Committee
4. Member of the Corporate Responsibility Committee
5. Member of the Technical 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 2, 2019, Daniel Owiredu is not seeking re-election to the Company's Board; the Company has nominated for election the other nine current directors as well as Mr. Naguib Sawiris.

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 has 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.

Samuel T. Coetzer

Mr. Coetzer was appointed President and Chief Executive Officer of the Company, effective January 1, 2013 and a director of the Company in December 2012. Prior to this appointment, he served the Company as Executive Vice President and Chief Operating Officer from March 2011 to December 2012. Mr. Coetzer has over 25 years of international mining experience, having held increasing levels of responsibility in various mining companies including Kinross Gold Corporation, Xstrata Nickel, Xstrata Coal South Africa, and Placer Dome Inc. Mr. Coetzer consulted to Kinross from February 2009 and was appointed in May 2009 as Senior Vice President, South American Operations for Kinross, serving in this role until September 2010. In this role, Mr. Coetzer was responsible for overseeing the Kinross assets in Brazil, Chile and Ecuador. From June 2007 to October 2008, Mr. Coetzer was the Chief Operating Officer of Xstrata Nickel, and from March 2006 to June 2007, he was the Chief Operating Officer of Xstrata Coal South Africa. Mr. Coetzer also has significant experience in Africa, having been with Placer Dome Inc.'s South African and Tanzanian operations, where he was Managing Director- South Africa and the Executive General Manager- Tanzania, from 2003 to February 2006. Mr. Coetzer's experience and expertise in managing mining operations of various mining companies positions him well to serve as the Chief Executive Officer and member of the Board of Directors. As Chief Executive Officer and formerly Chief Operating Officer of the Company, Mr. Coetzer has demonstrated strong leadership skills and extensive knowledge of operational issues facing the Company.

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. The Company believes that Mr. Clausen's extensive management, finance and operations experience in the metals industry, makes him well qualified to serve as a member of the Board. He brings intimate knowledge of board governance, corporate and project finance, strategic planning, operations as well as strengths in investor and public relations.

Graham Crew

Mr. Crew has over 25 years of operational, technical and corporate experience in the mining industry. A mining engineer by background, he is General Manager Mining for Barminco Limited, a global underground mining services provider, and he previously held the position of General Manager of the Bulyanhulu mine for Acacia Mining. Prior to that, he was the Operations Manager for La Mancha's Australian operations for five years and he has held a number of other technical positions for mining companies in various geographies. He has a strong track record of transforming operations through development of vision and strategy and disciplined implementation and he has experience of construction projects, due diligence, project evaluation and project financing. Mr. Crew holds a Bachelor's degree in Mining Engineering from West Australian School of Mines and is a Fellow of the AusIMM.

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.

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 Toronto Stock Exchange and NYSE American. 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.

Daniel Owiredu

Mr. Owiredu was appointed Executive Vice President Operations of the Company effective January 1, 2013. He was subsequently appointed to the board in November 2014. Mr. Owiredu has more than 30 years' experience in the mining sector in Ghana and West Africa. Mr. Owiredu previously served the Company as Senior Vice President Ghana Operations since May 10, 2012. Prior to that, he was Vice President Ghana Operations since September 2006. Prior to joining the Company, Mr. Owiredu served as Deputy Chief Operating Officer Africa for AngloGold Ashanti Ltd. following the amalgamation of AngloGold Ltd. and Ashanti

Goldfields Co. Ltd. Mr. Owiredu's prior experience includes successfully managing the construction and operation of the Bibiani mine for Ashanti. He also managed the Siguiri mine in Guinea and the Obuasi mine in Ghana for Ashanti.

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 has recently completed a LLM (International Commerce) degree from Salford University, UK. 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. 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 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
SAMUEL T. COETZER, Ontario, Canada	President and Chief Executive Officer
P. ANDRÉ VAN NIEKERK, Ontario, Canada	Executive Vice President and Chief Financial Officer
DANIEL OWIREDU, Greater Accra Region, Ghana	Executive Vice President and Chief Operating Officer
MARTIN RAFFIELD, Colorado, USA	Executive Vice President, Chief Technical Officer
S. MITCHEL WASEL Western Region, Ghana	Vice President, Exploration
BRUCE HIGSON-SMITH, Colorado, USA [1]	Senior Vice President, Corporate Strategy
KAREN WALSH, Wisconsin, USA	Vice President, People and Organizational Development

Notes:

1. Bruce Higson-Smith will cease to be Senior Vice President, Corporate strategy of Golden Star as at March 31, 2019.

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

P. André van Niekerk

P. André van Niekerk joined Golden Star in 2006. Mr. van Niekerk spent close to five years in Ghana as the head of finance and business operations, after which he was transferred to the corporate office to assume the role of Vice President - Controller. In April of 2014 Mr. van Niekerk was appointed to the role of Executive Vice President & Chief Financial Officer . While based in Ghana, Mr. van Niekerk was Vice Chairman of the Ghanaian Chamber of Mines Energy Committee and a member of the Chamber of Mines Finance Committee. Prior to joining Golden Star, Mr. van Niekerk spent six years with KPMG serving clients in the mining and oil and gas industries. Mr. van Niekerk has been the Executive Vice President and Chief Financial Officer for Golden Star for more than four years.

Dr. Martin Raffield

Martin Raffield was appointed Executive Vice President, Chief Technical Officer in January 2019. He joined Golden Star in August 2011 and previously held the role of Senior Vice President, Project Development and Technical Services. Prior to this, from June 2007, he was Principal Consultant and Practice Leader for SRK Consulting in Denver. Martin started his career in 1992 in South Africa working in geotechnical engineering at a number of deep level gold mines for JCI. In 2000, he relocated to Canada with Placer Dome and held the positions of Chief Engineer and Mine Superintendent at their Campbell Mine. Martin moved to Breakwater Resources in 2006 and held the position of Manager of Mining until moving to SRK in 2007. Martin holds a Ph.D. in geotechnical engineering from the University of Wales and is a Professional Engineer registered in Ontario, Canada.

S. Mitchell Wasel

Mr. Wasel has served as Vice President Exploration since September 2007, prior to which he served the Company as Regional Exploration Manager for West Africa from March 2004. Mr. Wasel served as the Company's Exploration Manager - Ghana from 2000 to March 2004. Mr. Wasel has acted in various other roles with the Company since 1993 when he commenced his service with the Company as an exploration geologist, where he worked in the Company's regional exploration program in Suriname and later with the Gross Rosebel project, ultimately as Project Manager. Prior to joining the Company, he worked with several companies in northern Canada in both exploration and mine geology.

Bruce Higson-Smith

Mr. Higson-Smith has served as Senior Vice President, Corporate Strategy since January 2013. Prior to that, he served the Company as Senior Vice President Finance and Corporate Development from January 2012 to January 2013 and Vice President, Corporate Development from September 2003 to January 2012. Mr. Higson-Smith is a qualified mining engineer with over 25 years of experience in the mining business. Following several years in underground mining operations in Africa and after earning an MBA in finance, Mr. Higson-Smith spent 10 years reviewing projects, conducting due diligence, negotiating and structuring mining transactions around the world, initially with the Castle Group, a mining investment management company, and then with Resource Capital Funds. Since joining the Company in 2003, he has been responsible for evaluating and executing M&A opportunities for the Company and also spent a year in Ghana as General Manager of Bogoso.

Karen Walsh

Ms. Walsh has served as Vice President People and Organizational Development since July 2012. Prior to joining the Company, Ms. Walsh did consulting work for six years in the mining industry from September 2007 to July 2012. Prior to that, Ms. Walsh was Vice President, Human Resources for Placer Dome Inc. from 2005 to August 2006. Ms. Walsh has over 25 years of experience in the mining industry with a broad range of human resources expertise including recruiting, succession planning, cultural change initiatives, HR process optimization, project development feasibility studies, global leadership development and performance management.

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 public 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.

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: Robert E. Doyle, Andrew Wray and Mona Quartey. All members of the Audit Committee are financially literate 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 2018 and 2017 are as follows:

Financial Year Ended	Audit Fees (1)	Audit-Related Fees (2)	Tax-Related Fees (3)	All Other Fees (4)	Total
December 31, 2018	CAD$1,053,136	CAD$36,750	0	0	CAD$1,089,886
December 31, 2017	CAD$888,919	CAD$121,800	0	CAD$10,008	CAD$1,020,727

Notes :

(1) Includes aggregate audit fees billed for the audit of the financial statements for the financial year indicated, including with respect to the Corporation'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 Corporation's subsidiaries pursuant to statutory financial statement requirements in Ghana.

(2) Includes fees related to the services provided by the Corporation'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. The fees for 2017 related to services rendered with respect to enterprise risk management.

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 only material contracts entered into by the Company within the financial year ended December 31, 2018 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 Term Loan. See "General Development of the Business - Three Year History".

INTEREST OF EXPERTS

The Company's independent auditors for fiscal 2018, PricewaterhouseCoopers LLP, Chartered Professional Accountants ("PwC"), have audited the consolidated financial statements of Golden Star for the year ended December 31, 2018. In connection with their audit, PwC has confirmed that they are independent within the meaning of the Rules of Professional Conduct of the Chartered Professional Accountants of Ontario and had complied with the SEC's rules on auditor independence.

Dr. Martin Raffield and Mr. Mitch Wasel are the QPs who supervised the preparation of the property descriptions contained herein and the Company's mineral reserve and mineral resource estimates as at December 31, 2018. Dr. Raffield and Mr. Wasel are officers 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.

The Bogoso/Prestea Technical Report was prepared by Dr. Raffield and Mr. Wasel, officers 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 Underground Feasibility Study was prepared by the independent consulting firm SRK under the supervision of Mike Beare, Neil Marshall, Chris Bray, Rod Redden and Paul Riley (the "SRK QPs"), and Mr. Mitch Wasel, officer of the Company, each of whom is a "qualified person" for the purposes of NI 43-101. The SRK QPs and Mr. Mitch 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 Wassa Underground Feasibility Study.

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, 2018.

SCHEDULE "A"
AUDIT COMMITTEE CHARTER

GOLDEN STAR RESOURCES LTD.
Audit Committee Charter

There shall be a committee of the Board of Directors (the "Board") of Golden Star Resources Ltd., a Canadian corporation ("Golden Star"), to be known as the Audit Committee (the "Committee") whose membership, authority and responsibilities shall be as set out in this Charter.

PRIMARY FUNCTION

The primary function of the Committee is to assist the Board in fulfilling its oversight responsibilities, primarily through (a) overseeing the integrity of Golden Star's financial statements and financial reporting process and Golden Star's systems of internal accounting and financial controls; (b) overseeing the performance of the internal auditors; (c) recommending the selection of, retaining and monitoring the independence and performance of Golden Star's outside auditors, including overseeing the audits of Golden Star's financial statements, and approving any non-audit services; and (d) facilitating communication among the outside auditors, management, internal auditors and the Board.

MEMBERSHIP

Following each annual meeting of the shareholders of Golden Star, the Board shall elect no fewer than three directors (the "Members") to the Committee and shall appoint one of the Members to chair the Committee. Each Member shall meet the independence requirements imposed by applicable law and stock exchange requirements (the "Listing Rules").

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

Any Member may be removed from office or replaced at any time by the Board and shall cease to be a Member upon ceasing to be a director. Each Member shall hold office until the close of the next annual meeting of shareholders of Golden Star or until the Member ceases to be a director, resigns or is removed or replaced, whichever first occurs.

A Member shall be considered independent if (a) he or she is not currently and has not been during the past three years, an employee or executive officer of Golden Star or its subsidiaries, other than as allowed by law and the Listing Rules; (b) he or she has not accepted, directly or indirectly, any consulting, advisory or other compensatory fee from Golden Star or its subsidiaries other than in connection with serving on the Committee, any other Board committee or as a Board member; (c) he or she is not an "affiliated person" of Golden Star or any Corporation subsidiary as defined by rules of the Securities and Exchange Commission ("SEC"), including Rule 10A-3 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and the Listing Rules; (d) he or she does not have a "material relationship" with Golden Star as defined by National Instrument 52-110 - *Audit Committees* ("NI 52-110"); and (e) he or she meets all other requirements for independence imposed by law and the Listing Rules from time to time and any requirements imposed by any applicable body having jurisdiction over Golden Star

No Member shall have participated in the preparation of the financial statements of Golden Star or its subsidiaries at any time during the past three years.

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 American rules and regulations, and at least one of the Members shall meet the financial sophistication standards under the Listing Rules.

MEETINGS

The Committee shall meet as frequently as is necessary to carry out its responsibilities, but at least quarterly, at such times and location determined by the Committee chairman. 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 chairman for any meeting, the Members shall elect a chairman from those in attendance to act as chairman of that meeting.

REPORTING

Following meetings of the Committee, the Committee chairman shall report to the Board issues before the Committee and actions taken by the Committee.

RESPONSIBILITIES, DUTIES AND POWERS

1. 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 outside auditors are 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 outside auditors' work.
2. 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.
3. The Committee's specific responsibilities and powers are as set forth below.

General Duties and Responsibilities

- Periodically review with management and the outside auditors the applicable law and the Listing Rules relating to the qualifications, activities, responsibilities and duties of audit committees and compliance therewith, and also take, or recommend that the Board take, appropriate action to comply with such law and rules.
- 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.

- Meet separately at least annually with each of Golden Star's senior management, including its Chief Financial Officer, Director of Internal Audit, Controller and outside auditors in separate executive sessions to discuss any matters that the Committee or each of these persons believes should be discussed privately.
- Establish procedures for: (a) the receipt, retention and treatment of complaints received by Golden Star regarding accounting, internal accounting controls or auditing matters; and (b) the confidential, anonymous submission by employees of Golden Star of concerns regarding questionable business conduct, accounting or auditing matters.
- Retain, at Golden Star's expense, independent counsel, accountants or other advisors for such purposes as the Committee, in its sole discretion, determines to be appropriate to carry out its responsibilities.
- Determine the necessary funding for the payment of: (a) compensation to outside auditors engaged for the purpose of preparing or issuing an audit report or performing other audit, review or attest services for Golden Star; (b) compensation to any advisors employed by the Committee and (c) ordinary administrative expenses of the Committee that are necessary or appropriate in carrying out its duties.
- Review and approve Golden Star's hiring policies regarding partners, employees, former partners and former employees of the present and former external auditor of Golden Star.
- Prepare or approve annual reports of the Committee for inclusion in the management information circular for Golden Star's annual meetings.
- Investigate any matter brought to its attention related to reports of improper business conduct, financial, accounting and audit matters and have full access to all books, records, facilities and personnel of Golden Star.
- Undertake such additional responsibilities as from time to time may be delegated to it by the Board, required by Golden Star's articles or bylaws or required by law or Listing Rules.

Auditor Independence

- Be directly responsible for the recommendation of, appointment of, compensation, retention, termination and oversight, subject to the requirements of applicable law, of the work of any outside auditor engaged by Golden Star for the purpose of preparing or issuing an audit report or performing other audit, review or attest services. The outside auditors shall report directly to the Committee.
- Receive from the outside auditors, review and discuss not less frequently than annually, a formal written statement delineating all relationships between the outside auditors and Golden Star which may impact the objectivity and independence of the outside auditors, and other applicable standards. The statement shall include a description of all services provided by the outside auditors and the related fees. The Committee shall actively discuss any disclosed relationships or services that may impact the objectivity and independence of the outside auditors and take appropriate action to satisfy itself of the independence of the auditors.
- Pre-approve all engagement letters and fees for all auditing services (including providing comfort letters in connection with securities offerings) and permitted non-audit services performed by the outside auditors, subject to any *de minimis* exception under Section 10A(i)(1)(B) of the Exchange Act and Section 2.4 under NI 52-110 and any rules promulgated thereunder. Pre-approval authority may be delegated to one or more independent Members, and any such Member shall report any decisions to the full Committee at its next scheduled meeting. The Committee shall not approve an engagement of outside auditors to render non-audit services that are prohibited by law or the Listing Rules.
- Obtain annual assurance from the outside auditors 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.

- Review with the outside auditors, at least annually, the auditors' internal quality control procedures and any material issues raised by the most recent internal quality peer review of the outside auditors.

Internal Control and Compliance with Corporate Business Conduct or Ethics Policies

- Review annually the adequacy and quality of Golden Star's financial and accounting staff, the need for and scope of internal audit reviews, and the plan, budget and the designations of responsibilities for any internal audit.
- Review the performance and material findings of internal audit reviews.
- Review annually, evaluate and discuss with the outside auditors, management and internal audit, management's report on internal controls over financial reporting and the related auditor's report, when and as required by Section 404 of the Sarbanes-Oxley Act and National Instrument 52-109 - *Certification of Disclosure in Issuers' Annual and Interim Filings* . Discuss any significant deficiencies in the design or operation of the Company's internal controls, material weaknesses in internal controls, any fraud (regardless of materiality), as well as any significant changes in internal controls implemented by management during the most recent reporting period. Determine whether any internal control recommendations made by outside auditors have been implemented by management.
- Review major financial risk exposures and the guidelines, policies and insurance that management has put in place to govern the process of assessing, controlling, managing and reporting such exposures. Receive reports from officers responsible for oversight of any particular financial risks within Golden Star upon change of any relevant policy, practice or circumstance within their department.
- 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. Approve any variations from the corporate treasury policy that may be required from time to time.
- 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.
- Review with outside auditors and legal counsel, as the Committee deems appropriate, actions taken to ensure compliance with the code of ethics or conduct for Golden Star established by the Board.

Annual and Interim Financial Statements

- Review, evaluate and discuss with Golden Star's management and outside auditors (a) the nature and extent of any significant changes in Canadian accounting principles including under international financial reporting standards ("IFRS"), (b) the application of accounting principles and significant accounting and reporting principles, (c) practices and procedures applied in preparing the financial statements, (d) all critical accounting policies and practices to be used, (e) any major changes to Golden Star's accounting or reporting principles, practices or procedures, including those required or proposed by professional or regulatory pronouncements and actions, as brought to its attention by management or the outside auditors, (f) information related to significant unusual transactions, including the business rationale for such transactions, and (g) any material written communications between the outside auditors and management, such as any management letter or schedule of unadjusted differences.

- Review and discuss with outside auditors alternative treatments of financial information under generally accepted accounting principles including IFRS, including pro forma financial information, the ramifications of each treatment and the method preferred by the outside auditors.
- Review the scope, plan and procedures to be used on the annual audit and receive confirmation from the outside auditors that no limitations have been placed on the scope or nature of their audit scope, plan or procedures.
- Review the results of any difficulties, differences or disputes with management encountered by the outside auditors during the course of the audit or reviews and be responsible for overseeing the resolution of such difficulties, differences and disputes.
- Review, evaluate and discuss with the outside auditors and management Golden Star's audited annual financial statements and other information that is to be included in Golden Star's annual information form, annual financial statements and the Form 40-F (or such other annual report as may be required by the rules and regulations of the SEC), including the disclosures in respect of Golden Star's "management's discussion and analysis of financial condition and results of operations", and the results of the outside auditors' audit of Golden Star's annual financial statements, including the accompanying notes, and the outside auditors' report, and determine whether to recommend to the Board that the annual financial statements are satisfactory in form and substance for filing on SEDAR and with the SEC. Review and discuss with the outside auditors and management Golden Star's quarterly financial statements and other information to be included in Golden Star's quarterly management discussion and analysis of financial condition and results of operations, prior to filing such reports on SEDAR and with the SEC.
- Approve Golden Star's interim financial statements, including the disclosures in respect of Golden Star's related "management's discussion and analysis of financial condition and results of operations", and determine whether the interim financial statements and related management's discussion and analysis of financial condition and results of operations are satisfactory in form and substance for filing on SEDAR and with the SEC.

Related Party Transactions

- Review and oversee any transaction exceeding US$120,000 or otherwise material to Golden Star involving Golden Star and a related party, and review any other related party transactions.

Earnings Press Releases

- Review and discuss with management and the outside auditors prior to release all earnings press releases of Golden Star, as well as any financial information and/or earnings guidance, if any, to be provided by Golden Star to analysts and rating agencies.

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Management's Discussion and Analysis

For the Year Ended December 31, 2018

TABLE OF CONTENTS

MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following management's discussion and analysis 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 Management's Discussion and Analysis of Financial Condition and Results of Operations (" MD&A ") should be read in conjunction with the Company's audited consolidated financial statements and related notes for the year ended December 31, 2018, which are prepared in accordance with International Financial Reporting Standards (" IFRS ") as issued by the International Accounting Standards Board (" IASB "). This MD&A includes information available to, and is dated, February 19, 2019. 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: production, cash operating costs, and all-in sustaining costs estimates and guidance for 2019 on a consolidated basis; sustaining and development capital expenditure estimates and guidance for 2019 on a consolidated basis; the Company's achievement of 2019 consolidated guidance; the range of consolidated gold production for 2019; planned exploration and drilling at Wassa and Prestea; the publication of a Preliminary Economic Assessment for Wassa Underground in the second half of 2019; improvements in raise development, long hole drilling and blasting productivities at Prestea Underground in 2019; the release of further drilling results and an updated Mineral Resource Estimate in the first quarter of 2019; the anticipation that Wassa's Inferred Mineral Resources will be increased by the results of drilling results announced December 17, 2018; the drilling focus on Father Brown and the Wassa Southern Extension in 2019 in order to accelerate organic growth; the drilling of the down plunge extension of West Reef with the objective of resource expansion of the deposit; drilling at Father Brown to test its structures at depth on 100-metre spaced sections; the objective of increasing the annual production rate at Prestea and extending the mine life; the intention to construct a paste backfill plant at Wassa, with the remainder of the capital budget at Wassa intended to include provisions for decline and ore drive development and purchasing of additional mining equipment; the objective at Father Brown of developing a standalone underground operation with a production rate of 1,500 tpd; the continued sourcing of ore from the open pits close to Prestea in the first quarter of 2019; the potential for Father Brown to be a second high grade ore supply for the Wassa processing plant; the Company's debt repayment obligations for 2019; the settlement of vested performance share units; the ability of the Company to generate operating margins; Golden Star's ability to successfully pursue organic or external growth; the sufficiency of cash available to support the Company's operations and mandatory expenditures for the next twelve months; the timing and use of proceeds of the La Mancha private placement and the ability of the Company to unlock organic growth opportunities and/or participate in the consolidation of the African gold sector.

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, 2017. Additional and/or updated risk factors, if applicable, will be included in our annual information form for the year ended December 31, 2018, which will be filed on SEDAR at www.sedar.com. 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 Dr. Martin Raffield, Senior Vice- President, Technical Services for Golden Star, who is a "qualified person" as defined by National Instrument 43-101 - Standards of Disclosure for Mineral Projects ("NI 43-101"), and by S. Mitchel Wasel, BSc Geology, who is a Qualified Person pursuant to 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, 2017 and the following current technical reports for those properties available at www.sedar.com: (i) Wassa - "NI 43-101 Technical Report on feasibility study of the Wassa open pit mine and underground project in Ghana" effective date December 31, 2014; 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") transformed into 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 transform into an underground-only operation during the first quarter of 2019. 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 the acquisition of additional mines.

As the winner of the Prospectors & Developers Association of Canada ("PDAC") 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

		For the Three Months Ended December 31,		For the Years Ended December 31,	
OPERATING SUMMARY		**2018**	**2017**	**2018**	**2017**
Wassa gold sold	oz	37,171	41,627	149,568	137,142
Prestea gold sold	oz	11,230	29,581	75,411	130,193
Total gold sold	oz	48,401	71,208	224,979	267,335
Wassa gold produced	oz	37,562	42,001	149,697	137,234
Prestea gold produced	oz	11,284	29,768	75,087	130,331
Total gold produced	oz	48,846	71,769	224,784	267,565
Average realized gold price [1]	$/oz	1,185	1,237	1,225	1,219
Cost of sales per ounce - Consolidated [2]	$/oz	1,351	1,111	1,156	998
Cost of sales per ounce - Wassa [2]	$/oz	836	1,096	898	1,153
Cost of sales per ounce - Prestea [2]	$/oz	3,054	1,137	1,681	823
Cash operating cost per ounce - Consolidated [2]	$/oz	905	812	847	763
Cash operating cost per ounce - Wassa [2]	$/oz	614	775	629	880
Cash operating cost per ounce - Prestea [2]	$/oz	1,867	875	1,292	632
All-in sustaining cost per ounce - Consolidated [2]	$/oz	1,218	1,002	1,107	944

[1] Average realized gold price per ounce excludes pre-commercial production ounces sold at Prestea Underground in 2018 and 2017.

[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 before depreciation and amortization.

		For the Three Months Ended December 31,		For the Years Ended December 31,	
FINANCIAL SUMMARY		**2018**	**2017[3]**	**2018**	**2017[3]**
Gold revenues	$'000	57,339	81,845	273,017	315,497
Cost of sales excluding depreciation and amortization	$'000	57,565	66,401	223,729	226,482
Depreciation and amortization	$'000	7,824	7,095	33,939	31,792
Mine operating (loss)/margin	$'000	(8,050)	8,349	15,349	57,223
General and administrative expense	$'000	2,244	7,881	16,428	25,090
(Gain)/loss on fair value of financial instruments, net	$'000	(3,274)	1,902	(6,786)	(2,057)
Net (loss)/income attributable to Golden Star shareholders	$'000	(9,318)	12,601	(18,123)	38,771
Adjusted net (loss)/income attributable to Golden Star shareholders [1]	$'000	(5,211)	10,701	(1,916)	41,642
(Loss)/income per share attributable to Golden Star shareholders - basic	$/share	(0.09)	0.17	(0.21)	0.52
(Loss)/income per share attributable to Golden Star shareholders - diluted	$/share	(0.09)	0.16	(0.21)	0.48
Adjusted (loss)/income per share attributable to Golden Star shareholders - basic [1]	$/share	(0.05)	0.14	(0.02)	0.56
Cash (used)/provided by operations	$'000	(24,676)	10,939	(7,555)	55,176
Cash (used)/provided by operations before working capital changes [2]	$'000	(9,416)	6,760	9,617	62,624
Cash (used)/provided by operations per share - basic	$/share	(0.23)	0.14	(0.09)	0.74
Cash (used)/provided by operations before working capital changes per share - basic [2]	$/share	(0.09)	0.09	0.11	0.84
Capital expenditures	$'000	15,280	16,751	46,834	69,638

[1] See "Non-GAAP Financial Measures" section for a reconciliation of adjusted net (loss)/income attributable to Golden Star shareholders and adjusted (loss)/income per share attributable to Golden Star shareholders to net (loss)/income attributable to Golden Star shareholders.

[2] See "Non-GAAP Financial Measures" section for an explanation of the calculation of cash (used)/provided by operations before working capital changes and cash (used)/provided by 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 $57.3 million in the fourth quarter of 2018, compared to $81.8 million in the same period in 2017.** Gold revenue for the fourth quarter of 2018 was $24.5 million or 30% lower than the same period in 2017, as a result of a decrease in gold revenue generated from Wassa and Prestea. Compared with the same period in 2017, gold revenue generated from Prestea decreased by 56% during the fourth quarter of 2018 resulting from the planned decrease in production from the Prestea Open Pits and the slower than expected ramp up at Prestea Underground. Gold revenue generated from Wassa decreased by 15% as a result of Wassa fully transitioning into an underground-only mining operation. During the fourth quarter of 2018, gold revenue from Wassa Underground accounted for 96% of total gold revenue of Wassa compared to 50% in the same period in 2017. The consolidated average realized gold price was $1,185 per ounce in the fourth quarter of 2018, compared to $1,237 per ounce for the same period in 2017. For the year ended December 31, 2018, gold revenue was $273.0 million , a 13% decrease compared to $315.5 million in the same period in 2017 due mainly to a 14% decrease in gold sold, offset partially by a 1% increase in average realized gold price.
- **Gold sales totaled 48,401 ounces in the fourth quarter of 2018, compared to 71,208 ounces sold in the same period in 2017.** Gold sales in the fourth quarter of 2018 decreased 32% from the same period in 2017 as a result of a decrease in gold sales from Wassa and Prestea. Wassa gold sales of 37,171 ounces in the fourth quarter of 2018 were 11% lower than the same period in 2017 as a result of Wassa fully-transitioning into an underground-only mining operation, as mining at Wassa Main Pit was suspended in January 2018. Although total Wassa gold sales decreased, Wassa Underground gold sales increased 71% in the fourth quarter of 2018 compared to the same period in 2017. Prestea gold sales of 11,230 ounces in the fourth quarter of 2018 were 62% lower than the same period in 2017 due primarily to the planned decrease in production from the Prestea Open Pits and the slower than expected ramp up at Prestea Underground. For the year ended December 31, 2018, gold sales of 224,979 ounces were 16% lower than the 267,335 ounces sold in 2017 due primarily to the lower than expected production at Prestea Underground, offset partially by the increase in production at Wassa Underground.
- **Cost of sales excluding depreciation and amortization in the fourth quarter of 2018 totaled $57.6 million compared to $66.4 million in the same period in 2017.** Cost of sales excluding depreciation and amortization in the fourth quarter of 2018 decreased 13% compared to the same period in 2017 due mainly to a decrease in mine operating expense resulting from Wassa fully transitioning into an underground-only mining operation and a decrease in royalties due to lower gold sold at Wassa and

Prestea. This was offset partially by an increase in severance, related to the Prestea improvement plan implemented during the fourth quarter, which included right-sizing the workforce at Prestea and optimizing the management and supervisory structure. For the year ended December 31, 2018, cost of sales excluding depreciation and amortization was $223.7 million , a 1% decrease compared to $226.5 million in 2017. The decrease was largely due to a 19% decrease in cost of sales excluding depreciation and amortization at Wassa, primarily related to a decrease in mine operating expenses resulting from fully transitioning to an underground-only mining operation at the end of January 2018. This decrease was offset by a 26% increase in cost of sales excluding depreciation and amortization at Prestea, related to the continued drawdown of ore stockpiles, an increase in mine operating expenses related to Prestea Underground costs no longer being capitalized as commercial production was achieved on February 1, 2018 and a $7.0 million increase in severance related to the Prestea improvement plan implemented in the fourth quarter of 2018.

- **Consolidated cost of sales per ounce was $1,351 in the fourth quarter of 2018, 22% higher than $1,111 in the same period in 2017. Consolidated cash operating cost per ounce was $905 in the fourth quarter of 2018, 11% higher than $812 in the same period in 2017.** Wassa achieved a 21% improvement in cash operating cost per ounce in the fourth quarter of 2018 due mainly to a reduction in mine operating expenses, as Wassa was fully transitioned into an underground-only mining operation at the beginning of the quarter, offset partially by lower gold sales in the period. The lower cash operating cost per ounce at Wassa was offset by a 113% increase in cash operating cost per ounce at Prestea resulting primarily from a decrease in gold sold in the quarter compared to the same period in 2017. For the year ended December 31, 2018, consolidated cash operating cost per ounce increased 11% to $847 from $763 in 2017 due mainly to a decrease in gold sold and an increase in inventory costs and mine operating expenses at Prestea, offset partially by an increase in gold sold and decrease in mine operating expenses at Wassa.
- **Depreciation and amortization expense totaled $7.8 million in the fourth quarter of 2018 compared to $7.1 million in the same period in 2017.** The increase in depreciation and amortization expense in the fourth quarter of 2018 was due to an increase in depreciation at both Wassa and Prestea. Wassa depreciation increased mainly due to an increase in gold production and mining interests, while Prestea depreciation increased due to the commencement of depreciation of Prestea Underground assets as commercial production was achieved on February 1, 2018. For the year ended December 31, 2018 depreciation and amortization expense totaled $33.9 million , 7% higher than $31.8 million in 2017 mainly due to an increase in gold production and mining interests at Wassa.
- **General and administrative expense totaled $2.2 million in the fourth quarter of 2018, compared to $7.9 million in the same period in 2017** . The decrease in general and administrative expense for the fourth quarter of 2018 was due primarily to a $6.5 million decrease in share-based compensation expense compared to the same period in 2017. For the year ended December 31, 2018, general and administrative expense totaled $16.4 million compared to $25.1 million in 2017. The decrease relates primarily to an $11.3 million decrease in share-based compensation expense compared to 2017. General and administrative expense, excluding share-based compensation, totaled $4.1 million and $15.6 million in the three months and year ended December 31, 2018, compared to $2.8 million and $12.5 million in the same periods in 2017. The increase in both periods relates primarily to an increase in salaries and benefits.
- **Finance expense totaled $3.8 million in the fourth quarter of 2018, compared to $1.1 million in the same period in 2017.** The increase in finance expense for the fourth quarter of 2018 was due primarily to a $2.5 million decrease in capitalized interest, as Prestea Underground achieved commercial production on February 1, 2018 and a $1.2 million increase in non-cash interest on the financing component of deferred revenue, partially offset by a $0.5 million increase in interest income, a $0.3 million increase in net foreign exchange gains and a $0.2 million increase in accretion of rehabilitation provision expense. For the year ended December 31, 2018 a total of $7.9 million in interest payments were made, compared to $7.3 million in 2017.
- **The Company recorded a gain of $3.3 million on fair value of financial instruments in the fourth quarter of 2018 compared to a $1.9 million loss in the same period in 2017.** The $3.3 million fair value gain in the fourth quarter of 2018 relates to a non-cash revaluation gain on the embedded derivative liability of the 7% Convertible Debentures. The $1.9 million fair value loss recognized in the fourth quarter of 2017 was related to a non-cash revaluation loss on the embedded derivative liability of the 7% Convertible Debentures. For the year ended December 31, 2018 and 2017, the Company recorded a $6.8 million and $2.1 million gain on fair value of financial instruments, respectively. The valuation techniques used for these financial instruments are disclosed in the “Financial Instruments” section of this MD&A.
- **Deferred income tax expense was $1.5 million in the fourth quarter of 2018 compared to a $12.9 million deferred income tax recovery for the same period in 2017.** For the year ended December 31, 2018, deferred income tax expense was $12.4 million, compared to a $12.9 million deferred income tax recovery in 2017. The deferred income tax expense of $1.5 million in the fourth quarter of 2018 and deferred income tax expense of $12.4 million for the year ended December 31, 2018 resulted primarily from the reversal of deferred tax assets, as tax losses and other attributes were applied to reduce Wassa's taxable income. The $12.9 million income tax recovery in the fourth quarter and year-ended December 31, 2017 was a result of recognizing tax assets on Wassa's carry forward tax losses and other deductible temporary differences.

- **Net loss attributable to Golden Star shareholders for the fourth quarter of 2018 totaled $9.3 million or $0.09 loss per share, compared to a net income of $12.6 million or $0.17 income per share (basic) in the same period in 2017.** The net loss and loss per share attributable to Golden Star shareholders in the fourth quarter of 2018 compared to the net income and income per share (basic) in the same period of 2017 was mainly due to a decrease of $16.4 million in mine operating margin, a $14.5 million decrease in income tax recovery, a $2.7 million increase in finance expense and a $2.4 million decrease in other income, partially offset by a $5.6 million decrease in general and administrative expenses and a $5.2 million increase in the gain on fair value of financial instruments. For the year ended December 31, 2018, net loss attributable to Golden Star shareholders totaled $18.1 million or $0.21 loss per share, compared to a net income of $38.8 million or $0.52 income per share (basic) in 2017. The net loss and loss per share attributable to Golden Star shareholders for the year ended December 31, 2018 compared to the net income and income per share (basic) in 2017 was mainly due to a decrease of $41.9 million in mine operating margin, $25.3 million increase in deferred income tax expense, and a $9.6 million increase in finance expense, partially offset by a $8.7 million decrease in general and administrative expenses and a $4.7 million increase in the gain on fair value of financial instruments.
- **Adjusted net loss attributable to Golden Star shareholders (see " Non-GAAP Financial Measures " section) was $5.2 million in the fourth quarter of 2018, compared to adjusted net income attributable to Golden Star shareholders of $10.7 million for the same period in 2017.** The decrease in adjusted net income attributable to Golden Star shareholders for the fourth quarter of 2018 compared to the same period in 2017 was primarily due to a lower consolidated mine operating margin related to Prestea, higher general and administrative expenses (excluding share based compensation) and higher net finance and exploration expenses. For the year ended December 31, 2018, the adjusted net loss attributable to Golden Star shareholders was $1.9 million compared to adjusted net income of $41.6 million in 2017. The decrease in adjusted net income attributable to Golden Star shareholders for the year ended December 31, 2018, was mainly due to a lower consolidated mine operating margin related to Prestea, higher general and administrative expenses (excluding share based compensation) and higher net finance and exploration expenses.
- **Cash used by operations before working capital changes (see " Non-GAAP Financial Measures " section) was $9.4 million for the fourth quarter of 2018, compared to $6.8 million of cash provided by operations before working capital changes in the same period in 2017.** The decrease in cash provided by operations before working capital changes was due primarily to a decrease in consolidated mine operating margin related to Prestea and an increase in consolidated general and administrative (excluding share based compensation), exploration, reclamation and interest payments. For the year ended December 31, 2018, cash provided by operations before working capital changes was $9.6 million compared to $62.6 million in 2017. The decrease was primarily due to a decrease in consolidated mine operating margin related to Prestea and a $10.0 million decrease in advance payments from RGLD AG ("RGLD"), as the full $145.0 million in advance payments under the Company's gold purchase and sale agreement with RGLD (the "Streaming Agreement") were received by the end of January 2017.
- **Capital expenditures for the fourth quarter of 2018 totaled $15.3 million compared to $16.8 million in the same period in 2017.** Capital expenditures at Wassa during the fourth quarter of 2018 comprised 90% of total capital expenditures and totaled $13.9 million , which included $4.5 million on exploration drilling, $4.0 million on Wassa Underground capitalized development, $3.9 million on Wassa Underground infrastructure and $1.5 million on other equipment. Capital expenditures at Prestea during the fourth quarter of 2018 comprised 10% of total capital expenditures and totaled $1.4 million , which included $0.9 million on Prestea Underground, $0.4 million on exploration drilling and $0.1 million on other equipment.

OUTLOOK FOR 2019

Production and cost guidance

	Gold production	Cash operating costs	All-in sustaining costs
	thousands of ounces	$ per ounce	$ per ounce
Wassa	170 - 180	560 - 600	
Prestea	50 - 60	840 - 1,000	
Consolidated	**220 - 240**	**620 - 680**	**875 - 955**

Wassa's production guidance has been increased by 17% from the 2018 achieved production of 149,697 ounces of gold. In 2019, Wassa is expected to produce at an average rate of approximately 3,500 tonnes per day ("tpd"). Deep drilling has continued to show positive results and studies are ongoing to decide on the optimal long-term development of the asset, including the appropriate mining method. A Preliminary Economic Assessment is expected in the second half of 2019.

At Prestea, with the cessation of open pit mining and the ongoing ramp-up of underground volumes, guidance for 2019 has been set at 50,000-60,000 ounces of gold for the year. In the final quarter of 2018, the Company concluded Prestea's rightsizing by reducing the workforce and establishing a lower direct operating cost base. During the fourth quarter of 2018, the plant at Prestea was converted to a low tonnage, high grade configuration allowing it to efficiently treat the underground production. At the end of 2018, improvements were being recorded in Prestea's lead production indicators.

Improvements in raise development, long hole drilling and blasting productivities are expected to continue to bring the production rate up to the 650 tpd target in 2019.

Capital expenditure guidance

	Sustaining	Development	Total
	$ millions	$ millions	$ millions
Wassa	20.7	18.1	38.8
Prestea	9.5	—	9.5
Exploration	—	13.4	13.4
Consolidated	**30.2**	**31.5**	**61.7**

For 2019, capital has been allocated to install infrastructure that is expected to achieve increased mining rates of 4,000 tpd in early 2020 at Wassa. This capital includes $18.1 million of development capital, which will be allocated to mobile equipment, paste backfill plant construction, electrical upgrades and improvements to the tailing facilities.

Capital has also been allocated for delineation and stope definition drilling in order to potentially increase Proven Mineral Reserves.

A budget of $13.4 million has been set for exploration activities in 2019, broken down to include $9.8 million at Wassa for both inferred resource expansion drilling and for seeking to convert inferred mineral resources to indicated mineral resources. In addition, an initial $1.5 million will be dedicated to Father Brown for infill expansion drilling. At Prestea, $1.6 million has been allocated for expansion drilling. The remaining $0.5 million is earmarked for follow-up drilling to be defined when results are delivered.

CORPORATE DEVELOPMENTS

Gold prices

Spot gold prices were $1,282 per ounce at December 31, 2018, consistent with $1,283 per ounce at December 31, 2017. The Company realized an average gold price of $1,225 per ounce for gold sales during 2018, compared to an average realized gold price of $1,219 per ounce in 2017. The spot gold price on February 19, 2019 was $1,325 per ounce.

Revenue from spot sales during the year ended December 31, 2018 resulted in an average realized price of $1,271 per ounce whereas revenue recognized from the Streaming Agreement with RGLD resulted in an average realized price of $835 per ounce.

	For the Year Ended December 31, 2018		
	$'000	Ounces	Realized price per ounce
Revenue - Stream arrangement			
Cash proceeds	$ 6,036		
Deferred revenue recognized	13,738		
	$ 19,774	23,692	$ 835
Revenue - Spot sales	253,243	199,238	1,271
Total	**$ 273,017**	**222,930**	**$ 1,225**

During the year ended December 31, 2018 , the Company recognized $10.6 million in deferred revenue, $3.1 million in amortization of financing component, and $4.8 million in interest on financing component of deferred revenue. Had the Company not adopted IFRS 15, deferred revenue recognized for the year ended December 31, 2018 would have been $13.7 million, and there would have been no amortization of financing component or interest on financing component of deferred revenue.

Private Placement

On October 1, 2018, 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 163,210,500 Golden Star common shares (32,642,100 post-share consolidation), 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 has 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. In addition, two new directors were appointed to the Company's Board of Directors pursuant to La Mancha's right to appoint up to three nominees. Andrew Wray, Chief Executive Officer of La Mancha, and Graham Crew, La Mancha's second nominee, joined the Board of Directors effective October 1, 2018.

The table below provides a breakdown of the expected use of proceeds from La Mancha’s $125.7 million strategic investment (net cash of $125.0 million). Golden Star has presented the use of proceeds as a series of ranges as the size of the exploration budget is dependent on the success of the exploration program at each asset and this will impact the size of the development and expansion budget and the budget for general corporate purposes. Golden Star has begun to use the proceeds from La Mancha’s strategic investment on its organic projects in the fourth quarter of 2018 and expects to continue to do so until the end of 2020, however, use of any proceeds for any external growth opportunities will be assessed on a case-by-case basis as they arise.

(Stated in millions of U.S dollars)	Range	
Exploration	$ 20.0	$ 35.0
Development and expansion	30.0	75.0
General corporate purposes	75.0	15.0
Total (Net Cash)	**$ 125.0**	**$ 125.0**

Exploration

Golden Star expects the majority of the $20.0 million to $35.0 million exploration budget set out in the above table to be allocated to Wassa Underground.

The second exploration focus is anticipated to be the Father Brown satellite deposit, which has the potential to be a second high grade ore supply for the Wassa processing plant as an underground operation. Golden Star mined Father Brown between 2011 and 2015 as an open pit operation. The two objectives of the planned drilling are to assess if the deposit extends beyond the current Inferred Mineral Resources beneath the Father Brown and Adoikrom pits.

The third focus of the exploration program is Prestea Underground, and the objective of this drilling is resource expansion of the West Reef deposit.

Golden Star currently has deployed fifteen diamond drill rigs across its three targets, with seven drilling Wassa from surface, four drilling from Wassa Underground, two at the Father Brown satellite deposit and two drill rigs at Prestea Underground.

Development and Expansion

The development and expansion budget set out in the above table has the objective of increasing the throughput of Wassa Underground and potentially developing the Father Brown satellite deposit.

At Wassa Underground, the objective is to increase Wassa Underground's average production rate from approximately 3,000 tpd in 2018 to approximately 4,000 tpd by mid-2020. Golden Star intends to construct a paste backfill plant, with the remainder of the budget to include provisions for decline and ore drive development and purchasing of additional mining equipment.

At Father Brown, the objective is to develop an underground mining operation with a production rate of potentially 1,500 tpd. The ore from Father Brown will be hauled to the Wassa plant for processing. However, the construction of the Father Brown underground operation is dependent on the success of the exploration program at the deposit.

General Corporate Purposes

The budget for general corporate purposes set out in the above table has a range of $15.0 million to $75.0 million primarily because if Golden Star chooses not to develop Father Brown into an underground operation, further funds will be available for severance expenses at Prestea and general corporate purposes. Golden Star may choose to use the funds for its external growth strategy or for organic development elsewhere within the Company.

The use of proceeds is discretionary and may be updated in accordance with Golden Star's plans to pursue organic or external growth.

Share Consolidation

On October 30, 2018, Golden Star consolidated its issued and outstanding common shares on the basis of one post-consolidation common share for every five pre-consolidation common shares (the "Consolidation"). The Consolidation was approved by the Company's shareholders at a special meeting held on September 17, 2018. Prior to the La Mancha transaction, there were 380.8 million Golden Star common shares issued and outstanding. After the completion of the transaction, there were 544.0 million common shares issued and outstanding, and post-Consolidation this number was approximately 108.8 million common shares issued and outstanding.

Exploration Update

During the fourth quarter of 2018, exploration activities at Wassa continued to focus on step out and inferred to indicated mineral resource conversion drilling. At Prestea Underground in-fill drilling continued to delineate Indicated Mineral Resources along the West Reef deposit. Surface drilling of the Father Brown and Adoikrom deposits continued in the fourth quarter, testing the structures at depth, below the historic open pits and looking to expand the current inferred mineral resources.

Golden Star released the results of drilling undertaken during the second half of 2018 on December 17, 2018[1]. These results confirmed that gold mineralization continues to the south of the Inferred Mineral Resources at Wassa Underground, demonstrating the extension of the deposit, which could result in an increase in Wassa's Inferred Mineral Resources. Infill drilling south of the current Mineral Reserve has also extended the known Inferred Mineral Resource both up and down dip as well as identified new gold mineralization in the hanging and foot wall of the main B-shoot horizon. Some of the previously released significant intercepts were as follows[2]:

- 10.4 metres grading 11.9 g/t of Au from 774.5 metres, including 6.4 metres grading 16.2 g/t Au in hole BS18DD393M
- 16.2 metres grading 6.7 g/t Au from 944.0 m in hole BS18DD392D1 (drilled depth from wedge)
- 15.6 metres grading 4.0 g/t Au from 256.7 m including 5.2 metres grading 6.7 g/t Au in hole BS18DD391D2 (drilled depths from wedge)

At the end of the fourth quarter of 2018, seven drill rigs were employed at Wassa with the objective of further testing the extensions of the Wassa Underground gold mineralization to the south as well as converting the Inferred Mineral Resources to Indicated Mineral Resources. Five holes were completed during the fourth quarter totaling approximately 4,800 metres, the results of which were released on December 17, 2018. Golden Star expects to release further drilling results and an updated Mineral Resource Estimate in the first quarter of 2019.

Prestea Underground

Drilling of the West Reef from 24 Level at Prestea Underground continued during the fourth quarter of 2018, with one drill rig completing eight holes for a total of 1,744 metres. The drilling focused on continuing to in-fill the existing Indicated Mineral Resources and testing Inferred Mineral Resources between the 21 and 27 Levels. The 262 drill chamber on 24 level was completed in the fourth quarter of 2018, which will enable a second underground drill rig to be mobilized to the mine to test the down plunge extension of West Reef. This drilling commenced in February 2019.

Father Brown satellite deposit

On February 19, 2019, the Company announced an updated Mineral Resource estimate at Father Brown, consisting of the Father Brown Zone and Adoikrom Zone. Inferred Mineral Resources have increased 93% from 246,000 ounces at year-end 2017, to 474,743 ounces at an average grade of 6.7 grams per tonne ("g/t") of gold ("Au"). The updated Indicated and Inferred Mineral

Resource estimate includes results of 18 holes totaling 8.873 metres of drilling. In 2019, a drilling budget of $1.5 million will be allocated to inferred expansion drilling of 9,000 metres. Further drilling will be assessed to expand the Inferred Mineral Resources and drill off the Inferred Mineral Resources to seek to upgrade them to the Indicated Mineral Resource category.

Ecobank IV Loan and Royal Gold Loan Repayment

On June 28, 2018, Golden Star (Wassa) Limited ("GWSL"), a subsidiary of Golden Star, closed a $20.0 million secured loan facility (the "Facility") with Ecobank Ghana Limited. The Company used the Facility to repay in full its existing $20.0 million medium term loan facility with Royal Gold, Inc. that would have been due in full on May 5, 2019 and which required a cash flow sweep. There are no prepayment penalties associated with the Facility. The Facility is repayable within 60 months of initial drawdown. Interest on amounts drawn under the Facility is payable monthly in arrears at an interest rate equal to three month LIBOR plus a spread of 7.5% per annum. During the year ended December 31, 2018, the Company made principal payments totaling $2.0 million resulting in a remaining principal balance of $18.0 million ($17.7 million net of transaction fees) at December 31, 2018.

Ecobank III Loan Drawdown

On January 24, 2018, the remaining $15.0 million available under the Ecobank III loan facility was drawn. The balance of the Ecobank III loan subsequent to the drawdown was $25.0 million with the full amount available under the facility now drawn. During the year ended December 31, 2018, the Company made principal payments totaling $4.7 million resulting in a remaining principal balance of $20.3 million ($19.9 million net of transaction fees) at December 31, 2018.

Commercial production achieved at Prestea Underground

On February 1, 2018, commercial production was achieved at the Company's Prestea Underground Mine in Ghana. Exploration drilling is underway at the mine with the objective of increasing the annual production rate and extending the mine life. Gold production is anticipated to ramp up during 2019 to name plate production rate of 650 tpd.

[1] See press release entitled, “Golden Star Reports Drilling Results from Wassa Underground Gold Mine”, dated December 17, 2018.

[2] All widths quoted are estimated true widths.

WASSA OPERATIONS

Through a 90% owned subsidiary, Golden Star (Wassa) Limited, 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 2017, 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 2017 and 2018, ore from both the Wassa Main Pit and Wassa Underground was processed at the Wassa processing plant.

		For the Three Months Ended December 31,		For the Years Ended December 31,	
		2018	2017	2018	2017
WASSA FINANCIAL RESULTS					
Revenue	$'000	44,109	51,628	183,078	167,376
Mine operating expenses	$'000	22,044	31,012	86,916	115,625
Severance charges	$'000	—	5,217	4,970	6,316
Royalties	$'000	2,316	2,682	9,508	8,652
Operating costs from metals inventory	$'000	789	1,253	7,184	5,080
Inventory net realizable value adjustment and write-off	$'000	349	—	3,684	2,410
Cost of sales excluding depreciation and amortization	$'000	25,498	40,164	112,262	138,083
Depreciation and amortization	$'000	5,593	5,440	22,066	20,052
Mine operating margin	$'000	13,018	6,024	48,750	9,241
Capital expenditures	$'000	13,898	8,470	35,420	21,583
WASSA OPERATING RESULTS					
Ore mined - Main Pit	t	—	520,482	54,281	1,601,004
Ore mined - Underground	t	309,504	171,907	1,075,218	681,141
Ore mined - Total	t	309,504	692,389	1,129,499	2,282,145
Waste mined - Main Pit	t	—	1,043,854	72,538	6,037,366
Waste mined - Underground	t	89,288	60,054	309,265	199,550
Waste mined - Total	t	89,288	1,103,908	381,803	6,236,916
Ore processed - Main Pit	t	92,211	476,828	525,666	1,925,587
Ore processed - Underground	t	309,504	179,186	1,075,218	691,255
Ore processed - Total	t	401,715	656,014	1,600,884	2,616,842
Grade processed - Main Pit	g/t	0.66	1.38	0.76	1.27
Grade processed - Underground	g/t	3.80	4.04	4.18	3.03
Recovery	%	95.4	94.4	95.7	94.6
Gold produced - Main Pit	oz	1,851	21,149	12,436	75,736
Gold produced - Underground	oz	35,711	20,852	137,261	61,498
Gold produced - Total	oz	37,562	42,001	149,697	137,234
Gold sold - Main Pit	oz	1,460	20,775	12,307	75,644
Gold sold - Underground	oz	35,711	20,852	137,261	61,498
Gold sold - Total	oz	37,171	41,627	149,568	137,142
Cost of sales per ounce [1]	$/oz	836	1,096	898	1,153
Cash operating cost per ounce [1]	$/oz	614	775	629	880

[1] See "Non-GAAP Financial Measures" section for a reconciliation of cost of sales per ounce and cash operating cost per ounce to cost of sales excluding depreciation and amortization.

For the three months ended December 31, 2018 compared to the three months ended December 31, 2017

Production

Gold production from Wassa was 37,562 ounces for the fourth quarter of 2018, an 11% decrease from the 42,001 ounces produced during the same period in 2017. This decrease in production was primarily due to Wassa becoming an underground-only mining operation as of February 1, 2018. Wassa Main Pit gold production decreased 91% in the fourth quarter of 2018 compared to the same period of 2017, with 92,211 tonnes of stockpiled open pit ore being processed throughout the quarter. Partially offsetting this decrease was a 71% increase in Wassa Underground gold production in the fourth quarter, resulting from increased ore tonnes mined compared to the same period in 2017.

Wassa Underground

Wassa Underground produced 35,711 ounces of gold (or approximately 95% of Wassa's total production) in the fourth quarter of 2018, compared to 20,852 ounces in the same period in 2017 (or approximately 50% of Wassa's total production). This 71% increase in production related to an 80% increase in ore tonnes mined, resulting from productivity improvements, offset partially by a 6% decrease in grade. Mining rates at Wassa Underground increased to approximately 3,400 tpd on average in the fourth quarter of 2018 compared to approximately 1,900 tpd in the same period in 2017. Underground ore processed increased 73% to 309,504 in the fourth quarter of 2018 compared to 179,186 tonnes in the same period in 2017.

Wassa Main Pit

Wassa Main Pit produced 1,851 ounces in the fourth quarter of 2018, compared to 21,149 ounces in the same period in 2017. This decrease in production is a result of the planned transition into an underground-only mining operation. Mining ceased from the Wassa Main Pit in January 2018 as planned, however, stockpiled ore continued to be fed to the processing plant during the fourth quarter of 2018.

Gold revenue

Gold revenue for the fourth quarter of 2018 was $44.1 million , a decrease of 15% from $51.6 million in the same period in 2017 due mainly to a decrease in gold sold. Gold sold decreased 11% to 37,171 ounces for the fourth quarter of 2018, compared to 41,627 ounces in the same period in 2017. The decrease was a result of Wassa becoming an underground-only mining operation as of February 1, 2018. The average realized gold price decreased 4% to $1,187 per ounce for the fourth quarter of 2018, compared to $1,240 per ounce in the same period in 2017.

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was $25.5 million for the fourth quarter of 2018, compared to $40.2 million for the same period in 2017. The decrease was due primarily to a $9.0 million or 29% decrease in mine operating expenses resulting from the suspension of open pit mining and related costs, as Wassa has fully transitioned into an underground-only mining operation. In addition, severance charges related to the suspension of the Wassa surface mining operation decreased $5.2 million or 100%, as this was completed in early 2018.

Depreciation and amortization

Depreciation and amortization expense increased to $5.6 million for the fourth quarter of 2018, compared to $5.4 million for the same period in 2017 due mainly to an increase in mining interests.

Costs per ounce

Cost of sales per ounce decreased 24% to $836 for the fourth quarter of 2018 from $1,096 in the same period in 2017. Cash operating cost per ounce decreased 21% to $614 from $775 for the same period in 2017. The lower costs per ounce in the fourth quarter of 2018 as compared to the same period in 2017 were primarily a result of a decrease in mine operating expenses.

Capital expenditures

Capital expenditures for the fourth quarter of 2018 totaled $13.9 million compared with $8.5 million during the same period in 2017. The increase in capital expenditures was due primarily to an increase of $3.5 million in exploration drilling and $1.9 million in Wassa Underground capitalized development, mobile equipment and underground heavy equipment costs to facilitate increased mining rates during the period.

For the year ended December 31, 2018 compared to the year ended December 31, 2017

Production

Gold production from Wassa was 149,697 ounces for the year ended December 31, 2018, a 9% increase from the 137,234 ounces produced in 2017. This increase in production was primarily due to increased production at Wassa Underground, as its grade, recovery and tonnes mined improved. As of February 1, 2018, Wassa became an underground-only mining operation, however, open pit stock piled ore continued to be processed throughout the year.

Wassa Underground

Wassa Underground produced 137,261 ounces of gold (or approximately 92% of Wassa's total production) for the year ended December 31, 2018, compared to 61,498 ounces in 2017 (or approximately 45% of Wassa's total production). This 123% increase in production was related to increased grade, recovery and tonnes mined, resulting from productivity improvements. The underground ore grade processed increased by 38% to 4.18 g/t Au for the year ended December 31, 2018 compared to 2017 as mining was focused solely on the B-Shoot zone where larger stopes and higher grade areas were accessed. Mining rates at Wassa Underground also increased to approximately 3,000 tpd on average for the year ended December 31, 2018 compared to approximately 1,900 tpd in 2017. Ore processed increased 56% for the year ended December 31, 2018 to 1,075,218 tonnes compared to the same period in 2017.

Wassa Main Pit

Wassa Main Pit produced 12,436 ounces for the year ended December 31, 2018, compared to 75,736 in the same period in 2017. This decrease in production is a result of the planned transition into an underground-only mining operation, as surface mining operations reached the bottom of the Cut 2 pushback. Mining ceased from the Wassa Main Pit in January 2018 as planned, however, stockpiled ore continued to be processed during the remainder of 2018.

Gold revenue

Gold revenue for the year ended December 31, 2018 was $183.1 million , an increase of 9% from $167.4 million in 2017 due mainly to an increase in gold sold. Gold sold increased 9% to 149,568 ounces for the year ended December 31, 2018 compared to 137,142 ounces in 2017. The increase was primarily a result of increased gold production from Wassa Underground. The average realized gold price remained consistent at $1,224 per ounce for the year ended December 31, 2018 compared to $1,220 per ounce in 2017.

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was $112.3 million for the year ended December 31, 2018 compared to $138.1 million in 2017. The decrease was due primarily to a 25% decrease in mine operating expenses resulting from the suspension of open pit mining and related costs, as Wassa transitioned into an underground-only mining operation at the end of January 2018. This decrease was partially offset by increased royalty expense due to higher gold sales, an increase in inventory costs and an increase in inventory net realizable adjustment and write-offs.

Depreciation and amortization

Depreciation and amortization expense increased to $22.1 million for the year ended December 31, 2018 compared to $20.1 million in 2017 due mainly to an increase in gold production and mining interests.

Costs per ounce

Cost of sales per ounce decreased 22% to $898 for the year ended December 31, 2018 compared to $1,153 in 2017. Cash operating cost per ounce decreased 29% to $629 for the year ended December 31, 2018 from $880 in 2017. The lower costs per ounce for the year ended December 31, 2018 as compared to 2017 was primarily a result of a decrease in mine operating expenses and an increase in gold sold related to increased production from Wassa Underground.

Capital expenditures

Capital expenditures for the year ended December 31, 2018 totaled $35.4 million compared to $21.6 million during the same period in 2017. The increase in capital expenditures is due primarily to an increase of $6.8 million in Wassa Underground capitalized development and $2.8 million in mobile equipment and underground heavy equipment costs related to facilitating increased mining rates during the period. In addition, an increase of $4.6 million in exploration costs were incurred in the year ended December 31, 2018 compared to 2017 related to phase one deep drilling at Wassa Underground, intended to further assess the B-Shoot and F-Shoot down plunge extensions. These increases were offset by a $0.4 million decrease in tailings facility and other replacement equipment capital expenditures.

PRESTEA OPERATIONS

Through a 90% owned subsidiary, Golden Star (Bogoso/Prestea) Limited, 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.

		For the Three Months Ended December 31,		For the Years Ended December 31,	
		2018	2017	2018	2017
PRESTEA FINANCIAL RESULTS					
Revenue	$'000	13,230	30,217	89,939	148,121
Mine operating expenses	$'000	20,982	21,952	89,112	81,753
Severance charges	$'000	9,882	2,833	9,888	2,916
Royalties	$'000	693	1,938	4,794	8,643
Operating costs (to)/from metals inventory	$'000	(11)	(486)	5,702	(4,913)
Inventory net realizable value adjustment and write-off	$'000	521	—	1,971	—
Cost of sales excluding depreciation and amortization	$'000	32,067	26,237	111,467	88,399
Depreciation and amortization	$'000	2,231	1,655	11,873	11,740
Mine operating (loss)/margin	$'000	(21,068)	2,325	(33,401)	47,982
Capital expenditures	$'000	1,382	8,281	11,414	48,055
PRESTEA OPERATING RESULTS					
Ore mined - Open pits	t	32,275	300,247	374,218	1,462,607
Ore mined - Underground	t	29,654	19,458	128,048	31,740
Ore mined - Total	t	61,929	319,705	502,266	1,494,347
Waste mined - Open pits	t	89,638	912,509	921,054	3,496,148
Waste mined - Underground	t	3,008	6,254	7,403	26,303
Waste mined - Total	t	92,646	918,763	928,457	3,522,451
Ore processed - Open pits	t	185,014	442,333	1,179,414	1,587,482
Ore processed - Underground	t	24,168	22,846	122,562	45,497
Ore processed - Total	t	209,182	465,179	1,301,976	1,632,979
Grade processed - Open pits	g/t	1.01	2.39	1.20	2.85
Grade processed - Underground	g/t	8.56	8.41	10.12	6.96
Recovery	%	84.9	82.6	86.8	86.4
Gold produced - Open pits	oz	4,632	24,723	37,623	121,757
Gold produced - Underground	oz	6,652	5,045	37,464	8,574
Gold produced - Total	oz	11,284	29,768	75,087	130,331
Gold sold - Open pits	oz	4,578	24,536	37,947	121,619
Gold sold - Underground	oz	6,652	5,045	37,464	8,574
Gold sold - Total	oz	11,230	29,581	75,411	130,193
Cost of sales per ounce [1]	$/oz	3,054	1,137	1,681	823
Cash operating cost per ounce [1]	$/oz	1,867	875	1,292	632

[1] See "Non-GAAP Financial Measures" section for a reconciliation of cost of sales per ounce and cash operating cost per ounce to cost of sales excluding depreciation and amortization.

For the three months ended December 31, 2018 compared to the three months ended December 31, 2017

Production

Gold production from Prestea was 11,284 ounces in the fourth quarter of 2018, a 62% decrease from the 29,768 ounces produced during the same period in 2017. This decrease in production was due primarily to the planned reduction from the Prestea Open Pits and a slower than expected ramp up at Prestea Underground.

Prestea Open Pits

The Prestea Open Pits produced 4,632 ounces in the fourth quarter of 2018, compared to 24,723 ounces in the same period in 2017. This decrease in production was planned, as the Prestea Open Pits were expected to complete gold production at the end of 2017. Mining has continued into the fourth quarter of 2018 with additional ore being sourced from the pits close to Prestea.

Prestea Underground

Prestea Underground declared commercial production on February 1, 2018 and produced 6,652 ounces in the fourth quarter of 2018 compared to 5,045 ounces in the same period in 2017. Grade, recovery and production improved in the fourth quarter of 2018 compared to the same period in 2017. In the fourth quarter of 2018, the Company concluded the business right-sizing of Prestea Underground's operations by reducing the workforce and establishing a lower operating cost base. In addition, the processing plant was converted to a low tonnage, high grade configuration allowing it to efficiently treat underground ore production. At the end of 2018, improvements were being recorded in Prestea's lead production indicators. Improvements in raise development, longhole drilling and blasting productivities are expected to continue to bring the production rate up to the 650 tpd target in 2019.

Gold revenue

Gold revenue for the fourth quarter of 2018 was $13.2 million , a decrease of 56% from $30.2 million in the same period of 2017 due mainly to a decrease in gold sales and average realized gold price. Gold sold decreased 62% to 11,230 ounces for the fourth quarter of 2018, compared to 29,581 ounces in the same period of 2017. The decrease was primarily a result of a decrease in gold production from the Prestea Open Pits and the slower than expected ramp up at Prestea Underground. The average realized gold price decreased 4% to $1,178 per ounce for the fourth quarter of 2018, compared to $1,232 per ounce for the same period in 2017.

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was $32.1 million for the fourth quarter of 2018, compared to $26.2 million for the same period in 2017. The increase was due primarily to a $7.0 million increase in severance charges related to the Prestea improvement plan implemented during the quarter, which included right-sizing the workforce at Prestea and optimizing the management and supervisory structure. This increase was offset partially by a $1.2 million decrease in royalties resulting from lower gold sales in the period and lower mine operating expenses related to less production from the Prestea Open Pits.

Depreciation and amortization

Depreciation and amortization expense increased to $2.2 million for the fourth quarter of 2018, compared to $1.7 million for the same period in 2017 due mainly to the commencement of depreciation of Prestea Underground assets as commercial production was achieved on February 1, 2018, offset partially by a decrease in gold production.

Costs per ounce

Cost of sales per ounce increased 169% to $3,054 for the fourth quarter of 2018 from $1,137 in the same period in 2017. Cash operating cost per ounce increased 113% to $1,867 from $875 for the same period in 2017. The increase in costs per ounce was primarily due to the decrease in gold sold in the quarter.

Capital expenditures

Capital expenditures for the fourth quarter of 2018 totaled $1.4 million compared to $8.3 million incurred during the same period in 2017. The decrease relates primarily to a $4.7 million decrease in development expenditures and $1.5 million decrease in capitalized borrowing costs relating to Prestea Underground which achieved commercial production on February 1, 2018. In addition, there was a $0.7 million decrease in capital expenditures related to the Prestea Open Pits and Mampon, as some of these deposits ceased production by the end of 2017.

For the year ended December 31, 2018 compared to the year ended December 31, 2017

Production

Gold production from Prestea was 75,087 ounces for the year ended December 31, 2018, a 42% decrease from the 130,331 ounces produced in 2017. 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 37,623 ounces for the year ended December 31, 2018, compared to 121,757 ounces in 2017. This decrease in production was planned, as the Prestea Open Pits were expected to complete gold production at the end of 2017. Mining continued into the fourth quarter of 2018 with additional ore being sourced from the pits close to Prestea and is expected to continue into the first quarter of 2019.

Prestea Underground

Prestea Underground declared commercial production on February 1, 2018 and produced 37,464 ounces for the year ended December 31, 2018, compared to 8,574 ounces in 2017. Grade, recovery and production improved in 2018 compared to 2017. In the fourth quarter of 2018, the Company concluded the business right-sizing of Prestea Underground's operations by reducing the workforce and establishing a lower operating cost base. In addition, the processing plant was converted to a low tonnage, high grade configuration allowing it to efficiently treat underground ore production. At the end of 2018, improvements were being recorded in Prestea's lead production indicators. Improvements in raise development, longhole drilling and blasting productivities are expected to continue to bring the production rate up to the 650 tpd target in 2019.

Gold revenue

Gold revenue for the year ended December 31, 2018 was $89.9 million , a decrease of 39% from $148.1 million in 2017 due mainly to a decrease in gold sold. Gold sold decreased 42% to 75,411 ounces for the year ended December 31, 2018 compared to 130,193 ounces in 2017. The decrease was primarily a result of a decrease in gold production from the Prestea Open Pits and the slower than expected ramp up at Prestea Underground. The average realized gold price remained consistent at $1,226 per ounce for the year ended December 31, 2018, compared to $1,218 per ounce in 2017.

Cost of sales excluding depreciation and amortization

Cost of sales excluding depreciation and amortization was $111.5 million for the year ended December 31, 2018, compared to $88.4 million in 2017. The increase was due primarily to a $10.6 million increase in inventory costs, as ore stockpiles were processed during the period related to the slower than expected Prestea Underground ramp up and the planned reduction from the Prestea Open Pits. Additionally, there was a $7.4 million or 9% increase in mine operating expenses due primarily to the addition of Prestea Underground mining costs that were capitalized in the same period in 2017. There was also a $7.0 million increase in severance charges related to the Prestea improvement plan implemented during the fourth quarter of 2018, which included right-sizing the workforce at Prestea and optimizing the management and supervisory structure. Offsetting these increases was a $3.8 million or 44% decrease in royalties due to lower gold sales in the year ended December 31, 2018.

Depreciation and amortization

Depreciation and amortization expense increased to $11.9 million for the year ended December 31, 2018, compared to $11.7 million in 2017 due mainly to the commencement of depreciation of Prestea Underground assets as commercial production was achieved on February 1, 2018.

Costs per ounce

Cost of sales per ounce increased 104% to $1,681 for the year ended December 31, 2018, compared to $823 in 2017. Cash operating cost per ounce increased 104% to $1,292 for the year ended December 31, 2018 compared to $632 in 2017. The increase in cost of sales per ounce and cash operating cost per ounce was primarily due to the increase in inventory costs and mine operating expenses in the period, as well as the decrease in ounces sold for the year ended December 31, 2018 compared to 2017.

Capital expenditures

Capital expenditures for the year ended December 31, 2018 totaled $11.4 million , compared to $48.1 million incurred in 2017. The decrease relates primarily to a $27.7 million decrease in development expenditures and a $4.7 million decrease in capitalized borrowing costs relating to Prestea Underground which achieved commercial production on February 1, 2018. In addition, there was a $4.6 million decrease in capital expenditure related to the Prestea Open Pits and Mampon, as some of these deposits ceased production by the end of 2017. Partially offsetting these decreases was a $0.3 million increase in exploration drilling expenditures, which has the objective of extending the West Reef and the Main Reef ore bodies.

SUMMARIZED QUARTERLY FINANCIAL RESULTS

(Stated in thousands of U.S dollars except per share data)	Three Months Ended,							
	Q4 2018	Q3 2018 [2]	Q2 2018 [2]	Q1 2018 [2]	Q4 2017 [2]	Q3 2017 [2]	Q2 2017 [2]	Q1 2017 [2]
Revenues	$ 57,339	$ 67,738	$ 77,121	$ 70,819	$ 81,845	$ 87,772	$ 77,335	$ 68,545
Cost of sales excluding depreciation and amortization	57,565	48,873	57,717	59,574	66,401	53,502	55,173	51,406
Net (loss)/income	(11,894)	(4,222)	(7,560)	(395)	13,825	13,703	13,681	(250)
Net (loss)/income attributable to shareholders of Golden Star	(9,318)	(3,178)	(6,642)	1,015	12,601	12,117	13,883	170
Adjusted net (loss)/income attributable to Golden Star shareholders [1]	(5,211)	3,011	2,408	(2,124)	10,701	19,827	7,703	3,411
Net (loss)/income per share attributable to Golden Star shareholders - basic	(0.09)	(0.04)	(0.09)	0.01	0.17	0.16	0.18	0.00
Net (loss)/income per share attributable to Golden Star shareholders - diluted	(0.09)	(0.04)	(0.09)	(0.03)	0.16	0.16	0.11	0.00
Adjusted (loss)/income per share attributable to Golden Star shareholders - basic [1]	(0.05)	0.04	0.03	(0.03)	0.14	0.26	0.09	0.05

[1] See "Non-GAAP Financial Measures" section for a reconciliation of adjusted net (loss)/income attributable to Golden Star shareholders and adjusted (loss)/income per share attributable to Golden Star shareholders to net (loss)/income 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.

LIQUIDITY AND FINANCIAL CONDITION

The Company held $96.5 million in cash and cash equivalents as at December 31, 2018 compared to $27.8 million in cash and cash equivalents at December 31, 2017. During the year ended December 31, 2018, operations used $7.6 million, investing activities used $48.0 million and financing activities provided $124.2 million of cash.

Before working capital changes, operations provided $9.6 million of operating cash flow for the year ended December 31, 2018, compared to $62.6 million in 2017. Cash provided by operations before working capital changes decreased primarily due to a decrease in consolidated mine operating margin related to the underperformance of Prestea, as well as a $10.0 million decrease in advance payments from RGLD as the full $145.0 million in advance payments under the Streaming Agreement were received by January 2017.

Working capital used $17.2 million during the year ended December 31, 2018, compared to $7.4 million in 2017. The working capital changes included a $25.8 million decrease in accounts payable and accrued liabilities and a $0.7 million increase in prepaids and other, offset by a $9.2 million decrease in inventory and a $0.2 million decrease in accounts receivable. Accounts payable and accrued liabilities reduced from $94.6 million at December 31, 2017 to $78.5 million at December 31, 2018.

Investing activities used $48.0 million during the year ended December 31, 2018, which included $19.8 million on the development of Wassa Underground, $7.7 million on the development of Prestea Underground, $10.3 million on exploration drilling and $8.4 million on equipment purchases and other.

Financing activities provided $124.2 million during the year ended December 31, 2018, compared to $18.7 million in 2017. Financing activities included net proceeds of $124.8 million from the private placement of common shares to La Mancha, gross proceeds of $15.0 million from Ecobank Loan III, $20.0 million from Ecobank Loan IV which was used to repay the $20.0 million Royal Gold loan, and $15.6 million in principal debt repayments.

LIQUIDITY OUTLOOK

As at December 31, 2018, the Company had $96.5 million in cash and working capital of $5.9 million, compared to $27.8 million in cash and a working capital deficit of $61.6 million at December 31, 2017. The Company has completed the development of Wassa Underground and Prestea Underground and the Company now expects to generate operating margin from its operations. The ramp-up at Prestea Underground to 650 tpd will continue in 2019, during which period a lower operating margin is expected.

The Company expects to incur $61.7 million on capital expenditures during 2019 of which $22.0 million is discretionary. The Company's debt repayment and servicing obligations are expected to approximate $36.4 million for 2019. In addition, the Company expects to incur $6.4 million for the settlement of vested performance share units in 2019. The majority of the severance payments related to the suspension of the Wassa and Prestea surface mining operations were completed by December 31, 2018.

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, 2018, the Company is committed to the following:

	Payment due by period				
(Stated in thousands of U.S dollars)	Less than 1 Year	1 to 3 years	4 to 5 years	More than 5 Years	Total
Accounts payable and accrued liabilities	$ 78,484	$ —	$ —	$ —	$ 78,484
Debt [1]	28,213	71,140	9,611	—	108,964
Other liability	6,410	—	—	—	6,410
Interest on long-term debt	8,155	11,136	623	—	19,914
Purchase obligations	13,762	—	—	—	13,762
Rehabilitation provisions [2]	7,455	25,566	24,707	13,678	71,406
Total	$ 142,479	$ 107,842	$ 34,941	$ 13,678	$ 298,940

[1] Includes the outstanding repayment amounts from the 7% Convertible Debentures maturing on August 15, 2021, Ecobank Loan III, Ecobank Loan IV, finance leases and the vendor agreement.

[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, 2018 and 2017 other than compensation of key management personnel which is presented in Note 21 of the audited consolidated financial statements for the year ended 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 (loss)/income attributable to Golden Star shareholders”, “adjusted (loss)/income per share attributable to Golden Star shareholders”, “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 accretion of rehabilitation provision. "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:

(Stated in thousands of U.S dollars except cost per ounce data)	For the Three Months Ended December 31,		For the Years Ended December 31,	
	2018	2017	2018	2017
Cost of sales excluding depreciation and amortization	$ 57,565	$ 66,401	$ 223,729	$ 226,482
Depreciation and amortization	7,824	7,095	33,939	31,792
Cost of sales	$ 65,389	$ 73,496	$ 257,668	$ 258,274
Cost of sales excluding depreciation and amortization	$ 57,565	$ 66,401	$ 223,729	$ 226,482
Severance charges	(9,882)	(8,050)	(14,858)	(9,232)
Royalties	(3,009)	(4,620)	(14,302)	(17,295)
Inventory net realizable value adjustment and write-off	(870)	—	(5,655)	(2,410)
Cash operating costs	$ 43,804	$ 53,731	$ 188,914	$ 197,545
Royalties	3,009	4,620	14,302	17,295
Inventory net realizable value adjustment and write-off	870	—	5,655	2,410
Accretion of rehabilitation provision	173	312	691	1,245
General and administrative costs, excluding share-based compensation	3,712	2,828	15,150	12,536
Sustaining capital expenditures	7,397	4,781	22,159	13,199
All-in sustaining costs	$ 58,965	$ 66,272	$ 246,871	$ 244,230
Ounces sold [1]	48,401	66,163	222,930	258,761
Cost of sales per ounce	$ 1,351	$ 1,111	$ 1,156	$ 998
Cash operating cost per ounce	$ 905	$ 812	$ 847	$ 763
All-in sustaining cost per ounce	$ 1,218	$ 1,002	$ 1,107	$ 944

[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 and 8,574 pre-commercial production ounces sold at Prestea Underground during 2018 and 2017, respectively.

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, 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
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

	For the Year 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
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

[1] Ounces sold used in the calculation of cost of sales per ounce and cash operating cost per ounce excludes 2,049 pre-commercial production ounces sold at Prestea Underground in January 2018.

(Stated in thousands of U.S dollars except cost per ounce data)	For the Three Months Ended December 31, 2017		
	Wassa	Prestea	Combined
Cost of sales excluding depreciation and amortization	$ 40,164	$ 26,237	$ 66,401
Depreciation and amortization	5,440	1,655	7,095
Cost of sales	$ 45,604	$ 27,892	$ 73,496
Cost of sales excluding depreciation and amortization	$ 40,164	$ 26,237	$ 66,401
Severance charges	(5,217)	(2,833)	(8,050)
Royalties	(2,682)	(1,938)	(4,620)
Metals inventory net realizable value adjustment	—	—	—
Cash operating costs	$ 32,265	$ 21,466	$ 53,731
Ounces sold [1]	41,627	24,536	66,163
Cost of sales per ounce	$ 1,096	$ 1,137	$ 1,111
Cash operating cost per ounce	$ 775	$ 875	$ 812

(Stated in thousands of U.S dollars except cost per ounce data)	For the Year Ended December 31, 2017		
	Wassa	Prestea	Combined
Cost of sales excluding depreciation and amortization	$ 138,083	$ 88,399	$ 226,482
Depreciation and amortization	20,052	11,740	31,792
Cost of sales	$ 158,135	$ 100,139	$ 258,274
Cost of sales excluding depreciation and amortization	$ 138,083	$ 88,399	$ 226,482
Severance charges	(6,316)	(2,916)	(9,232)
Royalties	(8,652)	(8,643)	(17,295)
Metals inventory net realizable value adjustment	(2,410)	—	(2,410)
Cash operating costs	$ 120,705	$ 76,840	$ 197,545
Ounces sold [1]	137,142	121,619	258,761
Cost of sales per ounce	$ 1,153	$ 823	$ 998
Cash operating cost per ounce	$ 880	$ 632	$ 763

[1] Ounces sold used in the calculation of cost of sales per ounce and cash operating cost per ounce excludes pre-commercial production ounces sold at Prestea Underground during the period.

"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 (loss)/income attributable to Golden Star shareholders

The table below shows the reconciliation of net (loss)/income attributable to Golden Star shareholders to adjusted net income attributable to Golden Star shareholders and adjusted income per share attributable to Golden Star shareholders:

(Stated in thousands of U.S dollars except per share data)	For the Three Months Ended December 31,		For the Years Ended December 31,	
	2018	2017[1]	2018	2017[1]
Net (loss)/income attributable to Golden Star shareholders	$ (9,318)	$ 12,601	$ (18,123)	$ 38,771
Add back/(deduct):				
Share-based compensation (recovery)/expense	(1,468)	5,053	1,278	12,554
Loss/(gain) on fair value of financial instruments	(3,274)	1,902	(6,786)	(2,057)
Loss on conversion of 7% Convertible Debentures	—	—	—	165
Severance charges	9,882	8,050	14,858	9,232
Gain on reduction of asset retirement obligations	(1,575)	(4,945)	(3,080)	(4,945)
Income tax expense (recovery) on previously unrecognized deferred tax asset	1,525	(12,944)	12,350	(12,944)
	(4,228)	9,717	497	40,776
Adjustments attributable to non-controlling interest	(983)	984	(2,413)	866
Adjusted net (loss)/income attributable to Golden Star shareholders	$ (5,211)	$ 10,701	$ (1,916)	$ 41,642
Adjusted (loss)/income per share attributable to Golden Star shareholders - basic	$ (0.05)	$ 0.14	$ (0.02)	$ 0.56
Weighted average shares outstanding - basic (millions)	108.5	76.1	84.3	74.7

[1] 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 (loss)/income 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 (loss)/ income attributable to Golden Star shareholders” is calculated by adjusting net (loss)/income attributable to Golden Star shareholders for share-based compensation expenses, gain on fair value of financial instruments, loss on conversion of 7% Convertible Debentures, severance charges, gain on reduction of asset retirement obligations and income tax expense on previously unrecognized deferred tax assets. “Adjusted (loss)/income per share attributable to Golden Star shareholders” for the period is “Adjusted net (loss)/income attributable to Golden Star shareholders” divided by the weighted average number of shares outstanding using the basic method of earnings per share.

Adjusted net (loss)/income attributable to Golden Star shareholders and adjusted (loss)/income 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 19, 2019, there were 108,819,009 common shares of the Company issued and outstanding, 3,498,143 stock options outstanding, 1,149,215 deferred share units outstanding, 790,517 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

On July 28, 2015, the Company through its subsidiary Caystar Finance Co. completed a $130.0 million gold purchase and sale agreement ("Streaming Agreement") with RGLD, a wholly-owned subsidiary of Royal Gold, Inc. The Streaming Agreement was subsequently amended on December 30, 2015 to provide an additional $15.0 million of streaming advance payment. As discussed in Note 3 of the year ended December 31, 2018 audited consolidated financial statements of the Company, there is a variable component involved in accounting for the deferred revenue associated with the Streaming Agreement. This variability is subject to retroactive adjustment when there is a significant change in the timing and quantity of ounces to be delivered over the term of the Streaming Agreement. Significant judgment is required in determining the expected delivery of ounces over the term of the Streaming Agreement and their associated cash flows. In undertaking this review, management of the Company is required to make significant estimates of, amongst other things, discount rates, future production volumes, metal prices and reserve and resource quantities. These estimates are subject to various risks and uncertainties which may ultimately have an effect on the deferred revenue recorded related to the Streaming Agreement. There were no retroactive adjustments recorded in the three and twelve months ended December 31, 2018, with the exception of the initial adjustment to adopt IFRS 15 recorded in the first quarter of 2018 as discussed in Note 3 of the year ended December 31, 2018 audited consolidated financial statements of the Company.

For a full list of judgments, estimates and assumptions please, refer to Note 4 of the 2018 annual financial statements.

CHANGES IN ACCOUNTING POLICIES

The Company has adopted the following new and revised standards, effective January 1, 2018. These changes were made in accordance with the applicable transitional provisions.

IFRS 2 Share-based payments was amended to address (i) certain issues related to the accounting for cash settled awards, and (ii) the accounting for equity settled awards that include a "net settlement" feature in respect of employee withholding taxes effective for years beginning on or after January 1, 2018. There was no impact to the financial statements on adoption of this standard.

IFRS 9 Financial Instruments was issued in July 2014 and includes (i) a third measurement category for financial assets - fair value through other comprehensive income; (ii) a single, forward-looking "expected loss" impairment model; and (iii) a mandatory effective date of annual periods beginning on or after January 1, 2018. On adoption of this standard, there was no accounting impact to the financial statements and there were no changes in the carrying values of any of the Company's financial assets.

IFRS 15 Revenue from Contracts with Customers was amended to clarify how to (i) identify a performance obligation in a contract; (ii) determine whether a company is a principal or an agent; and (iii) determine whether the revenue from granting a license should be recognized at a point in time or over time. In addition to the clarifications, the amendments include two reliefs to reduce cost and complexity for a company when it first applies the new standard. The amendments have the same effective date as the standard, which is January 1, 2018.

On January 1, 2018, the Company adopted the requirements of IFRS 15 Revenue from Contracts with Customers. As a result, the Company updated its accounting policy for deferred revenue to align with the requirements of IFRS 15. The Company elected to use the modified retroactive approach to initially adopt IFRS 15, 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, 2018.

Under IFRS 15, 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 10, 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 Streaming Agreement.

As the Company's Streaming Agreement contains a variable component, IFRS 15 requires that the transaction price be updated and re-allocated on a continuous 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.

The impact of the initial adoption of IFRS 15 was $19.0 million. The adjustment was recorded as an increase to deferred revenue with a corresponding increase to opening deficit.

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. The Company has completed an evaluation of the population of its contracts to ensure compliance with the new lease standard. The assessment has identified some contracts that will likely be capitalized under the new lease standard however the Company does not expect there to be a material impact on the financial statements upon adoption of IFRS 16 on January 1, 2019.

The changes in accounting policies and standards, interpretations and amendments not yet effective are disclosed in Note 3 of the audited consolidated financial statements for the year ended December 31, 2018.

FINANCIAL INSTRUMENTS

(Stated in thousands of U.S dollars)	Fair value at December 31, 2018	Basis of measurement	Associated risks
Cash and cash equivalents $	96,507	Amortized cost	Interest/Credit/Foreign exchange
Accounts receivable	3,213	Amortized cost	Foreign exchange/Credit
Trade and other payables	68,469	Amortized cost	Foreign exchange/Interest
Finance leases	1,683	Amortized cost	Interest
Ecobank Loan III	19,935	Amortized cost	Interest
Ecobank Loan IV	17,700	Amortized cost	Interest
7% Convertible Debentures	44,612	Amortized cost	Interest
Vendor agreement	16,776	Amortized cost	Interest/Foreign exchange
Long-term derivative liability	4,177	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 Ecobank Loan III, the Ecobank Loan IV, the vendor agreement and the finance leases approximate their carrying values as the interest rates are comparable to current market rates. Carrying value of the vendor agreement has been discounted to reflect its fair value.

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, 2018, a total gain of $6.8 million was recorded to the statement of operations.

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. For a complete discussion of the risks, refer to the Company's Annual Information Form for the year ended December 31, 2017 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, 2018, 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, 2018, 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.

The Company's management, under the supervision of the President and Chief Executive Officer and the Executive Vice President and Chief Financial Officer, assessed the effectiveness of the Company's internal control over financial reporting. In making this assessment, it used the criteria set forth in the Internal Control - integrated framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013). Based on our assessment, management has concluded that, as of December 31, 2018, the Company's internal control over financial reporting is effective based on those criteria.

The Company's internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP (“ PwC ”) Chartered Professional Accountants, Licensed Public Accountants, who also audited the Company's Consolidated Financial Statements for the year ended December 31, 2018. PwC, in its report that immediately precedes the Company's audited consolidated financial statements for the year ended December 31, 2018, expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

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, 2018 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, 2017. Additional and/or updated risk factors, if applicable, will be included in our annual information form for the year ended December 31, 2018, which will be filed on SEDAR at www.sedar.com.

Consolidated Financial Statements

For the Years Ended December 31, 2018 and December 31, 2017

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 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, a ny 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.

"Samuel T. Coetzer"	*"André van Niekerk "*
Samuel T. Coetzer	André van Niekerk
President and Chief Executive Officer	Executive Vice President and Chief Financial Officer

Toronto, Canada
February 19, 2019

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, 2018 and 2017, and the related consolidated statements of operations and comprehensive (loss)/income, cash flows and 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, 2018, 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, 2018 and 2017, and their financial performance and their cash flows for the years then ended in conformity with International Financial Reporting Standards as issued by the International Accounting Standards Board (IFRS). Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control – Integrated *Framework* (2013) issued by the COSO.

Change in Accounting Principle
As discussed in notes 2 and 11 to the consolidated financial statements, the Company changed the manner in which it accounts for revenue from contracts with customers in 2018.

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 28 of the 2018 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 19, 2019

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.

TABLE OF CONTENTS

FINANCIAL STATEMENTS

NOTES TO THE FINANCIAL STATEMENTS

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

	Notes	For the Years Ended December 31,	
		2018	2017
Revenue	17	$ 273,017	$ 315,497
Cost of sales excluding depreciation and amortization	18	223,729	226,482
Depreciation and amortization		33,939	31,792
Mine operating margin		15,349	57,223
Other expenses/(income)			
Exploration expense		2,959	1,871
General and administrative		16,428	25,090
Finance expense, net	19	18,072	8,485
Other income	20	(3,603)	(4,346)
Gain on fair value of financial instruments, net	5	(6,786)	(2,057)
Loss on conversion of 7% Convertible Debentures, net		—	165
(Loss)/income before tax		(11,721)	28,015
Deferred income tax expense/(recovery)	8	12,350	(12,944)
Net (loss)/income and comprehensive (loss)/income		$ (24,071)	$ 40,959
Net (loss)/income attributable to non-controlling interest		(5,948)	2,188
Net (loss)/income attributable to Golden Star shareholders		$ (18,123)	$ 38,771
Net (loss)/income per share attributable to Golden Star shareholders			
Basic	16	$ (0.21)	$ 0.52
Diluted	16	$ (0.21)	$ 0.48
Weighted average shares outstanding-basic (millions)		84.3	74.7
Weighted average shares outstanding-diluted (millions)		84.3	88.2

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, 2018	As of December 31, 2017
ASSETS			
CURRENT ASSETS			
Cash and cash equivalents		$ 96,507	$ 27,787
Accounts receivable		3,213	3,428
Inventories	6	35,196	50,653
Prepaids and other		5,291	5,014
Total Current Assets		140,207	86,882
RESTRICTED CASH		6,545	6,505
MINING INTERESTS	7	270,640	254,058
DEFERRED TAX ASSETS		595	12,944
Total Assets		$ 417,987	$ 360,389
LIABILITIES			
CURRENT LIABILITIES			
Accounts payable and accrued liabilities	9	$ 78,484	$ 94,623
Current portion of rehabilitation provisions	10	7,665	6,566
Current portion of deferred revenue	11	14,316	17,894
Current portion of long term debt	12	27,482	15,864
Current portion of other liability	15	6,410	13,498
Total Current Liabilities		134,357	148,445
REHABILITATION PROVISIONS	10	58,560	64,146
DEFERRED REVENUE	11	105,632	92,062
LONG TERM DEBT	12	73,224	79,741
DERIVATIVE LIABILITY	5	4,177	10,963
OTHER LIABILITY	15	—	6,786
Total Liabilities		375,950	402,143
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	908,035	783,167
CONTRIBUTED SURPLUS		37,258	35,284
DEFICIT		(831,283)	(794,180)
Shareholders' equity attributable to Golden Star shareholders		114,010	24,271
NON-CONTROLLING INTEREST		(71,973)	(66,025)
Total Equity/(Deficit)		42,037	(41,754)
Total Liabilities and Shareholders' Equity		$ 417,987	$ 360,389

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, 2018	2017
OPERATING ACTIVITIES:			
Net (loss)/income		$ (24,071)	$ 40,959
Reconciliation of net (loss)/income to net cash (used in)/provided by operating activities:			
Depreciation and amortization		33,975	31,823
Share-based compensation	15	1,278	12,554
Deferred income tax expense/(recovery)	8	12,350	(12,944)
Gain on fair value of 7% Convertible Debentures embedded derivative	5	(6,786)	(2,095)
Recognition of deferred revenue	11	(13,738)	(14,156)
Proceeds from Royal Gold stream	11	—	10,000
Reclamation expenditures	10	(5,316)	(5,992)
Other	24	11,925	2,475
Changes in working capital	24	(17,172)	(7,448)
Net cash (used in)/provided by operating activities		(7,555)	55,176
INVESTING ACTIVITIES:			
Additions to mining properties		(677)	(632)
Additions to plant and equipment		(95)	(649)
Additions to construction in progress		(44,163)	(67,591)
Proceeds from asset disposal		38	—
Change in accounts payable and deposits on mine equipment and material		(3,014)	1,103
Increase in restricted cash		(40)	(41)
Net cash used in investing activities		(47,951)	(67,810)
FINANCING ACTIVITIES:			
Principal payments on debt	12	(15,607)	(2,198)
Proceeds from debt agreements	12	35,000	10,000
5% Convertible Debentures repayment		—	(13,611)
Royal Gold loan repayment	12	(20,000)	—
Shares issued, net		124,772	24,456
Exercise of options		61	10
Net cash provided by financing activities		124,226	18,657
Increase in cash and cash equivalents		68,720	6,023
Cash and cash equivalents, beginning of period		27,787	21,764
Cash and cash equivalents, end of period		$ 96,507	$ 27,787

See Note 24 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 [1]	Share Capital	Contributed Surplus	Deficit	Non-Controlling Interest	Total Shareholders' Equity
Balance at December 31, 2016	**67,071,290**	**$ 746,542**	**$ 33,861**	**$ (832,951)**	**$ (68,213)**	**$ (120,761)**
Shares issued	8,161,900	35,682	—	—	—	35,682
Shares issued under DSUs	233,539	521	(521)	—	—	—
Shares issued under options	4,750	16	(6)	—	—	10
Shares issued under warrants	644,736	2,450	—	—	—	2,450
Options granted net of forfeitures	—	—	1,229	—	—	1,229
Deferred share units granted	—	—	387	—	—	387
Performance and restricted share units granted	—	—	334	—	—	334
Share issue costs	—	(2,044)	—	—	—	(2,044)
Net income	—	—	—	38,771	2,188	40,959
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 (see Note 3)	—	—	—	(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 (see Note 13)	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**

[1] See Note 13 for share consolidation details.

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

1. NATURE OF OPERATIONS

Golden Star Resources Ltd. ("Golden Star" or "the Company" or "we" or "our") is a Canadian federally-incorporated, international gold mining and exploration company headquartered in Toronto, Canada. The Company's shares are listed on the Toronto Stock Exchange (the "TSX") 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 ("CIL") processing plant (collectively, "Wassa"), located northeast of the town of Tarkwa, Ghana. Through our 90% owned subsidiary Golden Star (Bogoso/Prestea) Limited, the Company owns and operates the Bogoso gold mining and processing operations, the Prestea open-pit mining operations and the Prestea underground mine ("Prestea") located near the town of Prestea, Ghana. We 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 19, 2019 .

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.

These 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

Until December 31, 2017, deferred revenue consists of payments received by the Company for future delivery of payable gold under the terms of the Company’s Streaming Agreement. As deliveries were made, the Company recorded a portion of the deferred

revenue as sales, on a unit of production basis over the volume of gold expected to be delivered during the term of the streaming arrangement. The amount by which the deferred revenue balance was reduced and recognized into revenue was based on a rate per ounce of gold delivered under the stream. This rate per ounce of gold delivered was based on the remaining deferred revenue balance divided by the ounces that are expected to be delivered under the Stream Arrangement over the life of the arrangement. This estimate is re-evaluated at each reporting period with any resulting changes in estimate reflected prospectively.

Prior to the adoption of IFRS 15 *Revenue from Contracts with Customers,* the Streaming Agreement was recorded as a contract for the future delivery of gold ounces at the contracted price. The upfront payments were accounted for as prepayments of yet-to-be delivered ounces under the contract and were recorded as deferred revenue. The initial term of the contract is 40 years and the deposit bears no interest.

On January 1, 2018, the Company adopted the requirements of IFRS 15. The Company elected to use the modified retrospective approach to initially adopt IFRS 15 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, 2018.

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 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.

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 is 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, warrants, convertible debentures and other potentially dilutive instruments. In periods of loss, diluted net loss per share is equal to basic income per share.

Revenue recognition

Until December 31, 2017, revenue from the sale of metal was recognized when the significant risks and rewards of ownership have passed to the purchaser. This occurs when the amount of revenue could be measured reliably, the metal had been delivered, title has passed to the buyer and it was probable that the economic benefits associated with the transaction will flow to the entity. Title and risk of ownership pass to the buyer on the day doré was shipped from the mine sites. On January 1, 2018, the Company adopted the requirements of IFRS 15, where revenue from the sale of metal is recognized when the Company transfers control over to a customer. There was no impact to the accounting of revenue from the sale of doré on adoption of IFRS 15. 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)/income, with a corresponding increase recorded in the contributed surplus account in the consolidated balance sheets. 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)/income 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 is required to settle these awards in cash, they are accounted for as liability awards with corresponding compensation expense recognized. Long term PSU liabilities are recognized on the balance sheet as Long Term Other Liability and the current portion is recorded as Other Liability.

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.

Leases

Leases that transfer substantially all of the benefits and risks of ownership to the Company are 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 are classified as operating leases under which leasing costs are expensed in the period incurred. The Company will adopt IFRS 16, which was issued in January 2016 and applies to annual reporting periods beginning on or after January 1, 2019. See *Changes in accounting policies* below.

Financial instruments

Until December 31, 2017, the Company recognized all financial assets initially at fair value and classifies them into one of the following three categories: fair value through profit or loss ("FVTPL"), available-for-sale ("AFS") or loans and receivables, as appropriate. The Company had not classified any of its financial assets as held to maturity.

From January 1, 2018, 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. On adoption of IFRS 9 *Financial Instruments* , there was no accounting impact to the financial statements and there were no changes in the carrying values of any of the Company's financial assets.

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.

5% Convertible Debentures

The Company's 5% Convertible Debentures were considered financial instruments at FVTPL. The convertible debentures contained embedded derivatives that significantly modified the cash flows that otherwise would be required by the contract. The convertible debentures were recorded at fair value based on unadjusted quoted prices in active markets when available, otherwise by valuing the embedded derivative conversion feature and the debt component separately. The conversion feature was valued using a Black-Scholes model and the value of the debt was determined based on the present value of the future cash flows. Changes in fair value were recorded in the consolidated statement of operations. Upfront costs and fees related to the convertible debentures were recognized in the statement of operations as incurred and not deferred. The Company's 5% Convertible Debentures were fully settled during the year ended December 31, 2017 .

Warrants

The Company's warrants were considered financial instruments at FVTPL. Prior to the holder exercising the warrants in full in 2017, the holder of the warrants had an option to request a cashless exercise. As a result, the warrants were classified as financial liability instruments and were recorded at fair value at each reporting period end using a Black-Scholes model. Warrant pricing models required the input of certain assumptions including price volatility and expected life. All warrants were exercised during the year ended December 31, 2017 .

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, 2018 .

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.

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, 2018. These changes were made in accordance with the applicable transitional provisions.

IFRS 2 *Share-based payments* was amended to address (i) certain issues related to the accounting for cash settled awards, and (ii) the accounting for equity settled awards that include a "net settlement" feature in respect of employee withholding taxes effective for years beginning on or after January 1, 2018. There was no impact to the financial statements on adoption of this standard.

IFRS 9 *Financial Instruments* was issued in July 2014 and includes (i) a third measurement category for financial assets - fair value through other comprehensive income; (ii) a single, forward-looking "expected loss" impairment model; and (iii) a mandatory effective date of annual periods beginning on or after January 1, 2018. On adoption of this standard, there was no accounting impact to the financial statements and there were no changes in the carrying values of any of the Company's financial assets.

IFRS 15 *Revenue from Contracts with Customers* was amended to clarify how to (i) identify a performance obligation in a contract; (ii) determine whether a company is a principal or an agent; and (iii) determine whether the revenue from granting a license should be recognized at a point in time or over time. In addition to the clarifications, the amendments include two additional reliefs to reduce cost and complexity for a company when it first applies the new standard. The amendments have the same effective date as the standard, which is January 1, 2018. The impact of the initial adoption of IFRS 15 was $19.0 million . The adjustment was recorded as an increase to deferred revenue with a corresponding increase to opening deficit.

Standards, interpretations and amendments not yet effective

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. The Company has completed an evaluation of the population of its contracts to ensure compliance with the new lease standard. The assessment has identified some contracts that will likely be capitalized under the new lease standard however the Company does not expect there to be a material impact on the financial statements upon adoption of IFRS 16 on January 1, 2019, which will be applied on a modified retrospective basis.

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 is not expected to be any 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.

Inventory valuation

Inventories are recorded at the lower of average cost or net realizable value ("NRV"). The allocation of costs to ore in stockpiles and the determination of NRV involve the use of estimates. Stockpiled ore represents coarse ore that has been extracted from the mine and is stored for future processing. Stockpiled ore is measured using estimates such as 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. Timing and recovery of stockpiled ore can vary significantly from the estimates.

The net realizable value of materials and supplies is recorded based on the expected usage of the inventory items, salvage value and condition of the inventory items, all of which are based on management estimates and judgments.

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 and resources 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.

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 that 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. Deferred revenue is recognized as revenue based on the percentage of ounces delivered in the period over the total estimated ounces to be delivered over the life of the Streaming Agreement.

Commencement of commercial production

Prior to the period when a mine has reached management's intended operating levels, costs incurred as part of the development of the related mining property are capitalized and any gold sales during the development period are offset against the cost capitalized. The Company defines the commencement of commercial production as the date that a mine has achieved a consistent level of production. Depreciation/amortization of capitalized costs for mining properties begins when operating levels intended by management has been reached.

There are a number of factors the Company considers when determining if conditions exist for the commencement of commercial production of an operating mine. Management examines the following factors when making that judgement:

- All major capital expenditures to bring the mine to the condition necessary for it to be capable of operating in the manner intended by management have been completed;
- The completion of a reasonable period of testing of the mine properties;
- The mine and/or mill has reached a pre-determined percentage of design capacity; and
- The ability to sustain ongoing production of ore.

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, 2018 and December 31, 2017 :

		December 31, 2018		December 31, 2017	
	Level	Carrying value	Fair value	Carrying value	Fair value
Financial Liabilities					
Fair value through profit or loss					
7% Convertible Debentures embedded derivative	3	4,177	4,177	10,963	10,963

There were no non-recurring fair value measurements of financial instruments as at December 31, 2018 .

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, 2018 , there were no transfers between the levels of the fair value hierarchy.

Gain on fair value of financial instruments in the Statements of Operations and Comprehensive (Loss)/Income includes the following components:

	For the Years Ended December 31,	
	2018	2017
Loss on fair value of 5% Convertible Debentures	$ —	$ 317
Gain on fair value of warrants	—	(86)
Gain on warrant exercise	—	(193)
Gain on fair value of 7% Convertible Debentures embedded derivative	(6,786)	(2,095)
	$ (6,786)	$ (2,057)

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, 2018 and December 31, 2017 using a convertible note valuation model. The significant inputs used in the convertible note valuation are as follows:

	December 31, 2018	December 31, 2017
Embedded derivative		
Risk premium	5.0%	7.9%
Borrowing costs	10.0%	15.0%
Expected volatility	45.0%	45.0%
Remaining life (years)	2.6	3.6

The following table presents the changes in the 7% Convertible Debentures embedded derivative for the year ended December 31, 2018 :

	Fair value
Balance at December 31, 2017	$ 10,963
Gain on fair value of 7% Convertible Debentures embedded derivative	(6,786)
Balance at December 31, 2018	$ 4,177

If the risk premium increases by 10% , the fair value of the 7% Convertible Debentures embedded derivative would decrease and the related gain in the Statement of Operations would increase by $0.2 million for the year ended December 31, 2018 .

If the borrowing costs increases by 10% , the fair value of the 7% Convertible Debentures embedded derivative would decrease and the related gain in the Statement of Operations would increase by $0.2 million for the year ended December 31, 2018 .

If the expected volatility increases by 10% , the fair value of the 7% Convertible Debentures embedded derivative would increase and the related gain in the Statement of Operations would decrease by $0.7 million for the year ended December 31, 2018 .

6. INVENTORIES

Inventories include the following components:

	As of December 31, 2018	As of December 31, 2017
Stockpiled ore	$ 6,613	$ 22,998
In-process ore	4,188	4,014
Materials and supplies	23,659	22,677
Finished goods	736	964
Total	$ 35,196	$ 50,653

The cost of inventories expensed for the year ended December 31, 2018 and 2017 was $209.4 million and $209.2 million , respectively.

Net realizable value adjustments of $2.8 million was recorded for stockpiled ore during the year ended December 31, 2018 (year ended December 31, 2017 - $3.5 million).

During the year ended December 31, 2018 , a total of $2.8 million materials and supplies inventories were written off at Wassa. These are primarily related to open-pit mining equipment, materials and supplies as open-pit mining at Wassa was terminated in the first quarter of 2018. There were no write offs in the prior period.

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, 2016	461,438	746,657	131,409	1,339,504
Additions	649	632	63,072	64,353
Transfers	24,269	48,122	(72,391)	—
Capitalized interest	—	—	5,285	5,285
Change in rehabilitation provision estimate	—	3,022	—	3,022
Disposals and other	(7,142)	—	(452)	(7,594)
Balance at 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
Accumulated depreciation				
As of December 31, 2016	431,698	692,789	—	1,124,487
Depreciation and amortization	12,385	20,431	—	32,816
Disposals and other	(6,791)	—	—	(6,791)
Balance at 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
Carrying amount				
Balance at December 31, 2017	$ 41,922	$ 85,213	$ 126,923	$ 254,058
Balance at December 31, 2018	$ 45,961	$ 196,110	$ 28,569	$ 270,640

As at December 31, 2018 , equipment under finance leases had net carrying amounts of $3.0 million (December 31, 2017 - $1.6 million). The total minimum lease payments are disclosed in Note 12 - Debt.

No depreciation is charged to construction in progress assets. For the year ended December 31, 2018 , the general capitalization rate for borrowing costs was 7% . Commercial production was achieved February 1, 2018, therefore no capitalized interest was recorded since.

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 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 assets at December 31, 2018 and 2017 include the following components:

	As of December 31, 2018	As of December 31, 2017
Deferred tax assets		
Tax losses carried forward	$ 10,322	$ 17,773
Deductible temporary differences relating to provisions	5,995	4,821
Deferred tax liabilities		
Mine property costs	15,723	9,650
Net deferred tax assets	$ 594	$ 12,944

The Company has recognized $0.6 million of net deferred tax assets as at December 31, 2018 following an assessment in the prior year of future profitability of the Company's subsidiary Golden Star (Wassa) Limited and concluded the realization of the net deferred tax assets is probable.

The composition of our unrecognized deferred tax assets by tax jurisdiction is summarized as follows:

	As of December 31, 2018	As of December 31, 2017
Deductible temporary differences		
Canada	$ 8,844	$ 12,755
Ghana	31,509	44,232
	$ 40,353	$ 56,987
Tax losses		
Canada	$ 50,718	$ 48,411
U.S.	175	311
Ghana	287,545	257,771
	$ 338,438	$ 306,493
Total unrecognized deferred tax assets		
Canada	$ 59,562	$ 61,166
U.S.	175	311
Ghana	319,054	302,003
	$ 378,791	$ 363,480

The income tax expense/(recovery) includes the following components:

	For the years ended December 31,	
	2018	2017
Current tax recovery		
Current tax on net earnings	$ 12,350	$ —
Deferred tax recovery		
Recovery of previously unrecognized deferred tax assets	—	(12,944)
Income tax expense/(recovery)	$ 12,350	$ (12,944)

A reconciliation of expected income tax on net (loss)/income before minority interest at statutory rates with the actual income tax expense/(recovery) is as follows:

	For the years ended December 31,	
	2018	2017
Net (loss)/income before tax	$ (11,721)	$ 28,015
Statutory tax rate	26.5%	26.5%
Tax benefit at statutory rate	$ (3,106)	$ 7,424
Foreign tax rates	(15,562)	(10,629)
Other	132	74
Non taxable/deductible items	(676)	(20)
Change in unrecognized deferred tax assets due to exchange rates	3,427	(1,180)
Change in unrecognized deferred tax assets	28,135	(8,613)
Deferred income tax expense/(recovery)	$ 12,350	$ (12,944)

At December 31, 2018 , the Company had a tax pool and loss carryovers expiring as follows:

	Canada	Ghana	Other
2019	$ —	$ 33,488	$ —
2020	—	109,841	—
2021	—	12,822	
2026	8,115		—
2027	12,306	117,889	—
2028	11,106	—	—
2029	16,841	—	—
2030	15,052	—	—
2031	28,240	—	—
2032	13,670	—	—
2033	5,884	—	347
2034	—	—	364
2035	8,049	—	1
2036	13,123	—	120
2037	14,827		
Indefinite	37,867	577,012	—
Total	$ 185,080	$ 851,052	$ 832

$821.6 million of the Ghana tax pool is usable against taxable income generated at Prestea, with the remaining amount totaling $29.5 million usable against taxable income generated at Wassa.

9. ACCOUNTS PAYABLE AND ACCRUED LIABILITIES

Accounts payable and accrued liabilities include the following components:

	As of December 31, 2018	As of December 31, 2017
Trade and other payables	$ 42,947	$ 44,048
Accrued liabilities	25,522	40,165
Payroll related liabilities	10,015	10,410
Total	$ 78,484	$ 94,623

10. REHABILITATION PROVISIONS

At December 31, 2018 , the total undiscounted amount of future cash needs for rehabilitation was estimated to be $73.5 million . A discount rate assumption of 2% and an inflation rate assumption of 2% were used to value the rehabilitation provisions. The changes in the carrying amount of the rehabilitation provisions are as follows:

	For the Year Ended December 31, 2018	For the Year Ended December 31, 2017
Beginning balance	$ 70,712	$ 77,382
Accretion of rehabilitation provisions	691	1,245
Changes in estimates	138	(1,923)
Cost of reclamation work performed	(5,316)	(5,992)
Balance at the end of the period	$ 66,225	$ 70,712
Current portion	$ 7,665	$ 6,566
Long term portion	58,560	64,146
Total	$ 66,225	$ 70,712

During the year ended December 31, 2018 , the Company recorded an increase in estimate for Wassa of $1.0 million due to a revision in the timing of payments. At December 31, 2018 , the rehabilitation provision for Wassa was $17.2 million (2017 - $17.4 million). The Company expects the payments for reclamation to be incurred between 2019 and 2027.

During the year ended December 31, 2018 , the Company recorded a decrease in estimate for Prestea of $0.8 million . The decrease is due to a $3.1 million reduction in expected reclamation costs relating to the refractory liability and a $2.3 million increase in the expected reclamation costs relating to the non-refractory operation. The reduction of $3.1 million was primarily a result of a reduction in water treatment liability from ongoing treatment and a negative water balance. The reduction was recorded as other income since the carrying value of the underlying refractory assets were $nil after suspension of its operation in 2015. At December 31, 2018 , the rehabilitation provision for Prestea was $49.0 million (2017 - $53.3 million). The Company expects the payments for reclamation to be incurred between 2019 and 2028.

11. DEFERRED REVENUE

On July 28, 2015, the Company through its subsidiary Caystar Finance Co. completed a $130 million gold purchase and sale agreement (“Streaming Agreement”) with RGLD, a wholly-owned subsidiary of Royal Gold, Inc. ("RGI"). This Streaming Agreement was subsequently amended on December 30, 2015 to provide an additional $15 million of streaming advance payment. The Streaming percentages were adjusted as follows to reflect the $15 million additional advance payment: From January 1, 2016, the Company will deliver 9.25% of gold production from Wassa and Prestea to RGLD at a cash purchase price of 20% of spot gold. From January 1, 2018, 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 from Wassa and Prestea at a cash purchase price of 30% of spot gold price will be delivered.

During the year ended December 31, 2018 , the Company sold 23,692 ounces of gold to RGLD. Revenue recognized on the ounces sold to RGLD during the year ended December 31, 2018 consisted of $6.0 million of cash payment proceeds and $13.7 million of deferred revenue recognized in the period (see Note 17). The Company has delivered a total of 78,461 ounces of gold to RGLD since the inception of the Streaming Agreement.

	For the Years Ended December 31,	
	2018	2017
Beginning balance	$ 109,956	$ 114,112
Impact of adopting IFRS 15 on January 1, 2018 (see Note 3)	18,980	—
Deposits received	—	10,000
Deferred revenue recognized	(13,738)	(14,156)
Interest on financing component of deferred revenue	4,750	—
Balance at the end of the period	$ 119,948	$ 109,956
Current portion	$ 14,316	$ 17,894
Long term portion	105,632	92,062
Total	$ 119,948	$ 109,956

During the year ended December 31, 2018 , the Company recognized $10.6 million deferred revenue, $3.1 million amortization of financing component, and $4.8 million interest on financing component of deferred revenue. Had the Company not adopted IFRS 15, deferred revenue recognized for the year ended December 31, 2018 would have been $13.7 million and there would have been no amortization of financing component or interest on financing component of deferred revenue.

12. DEBT

The following table displays the components of our current and long term debt instruments:

	As of December 31, 2018	As of December 31, 2017
Current debt:		
Equipment financing credit facility	$ —	$ 147
Finance leases	1,151	1,229
Ecobank Loan III	5,555	2,222
Ecobank Loan IV	4,000	—
Vendor agreement	16,776	12,266
Total current debt	$ 27,482	$ 15,864
Long term debt:		
Finance leases	$ 532	$ 269
Ecobank Loan III	14,380	7,337
Ecobank Loan IV	13,700	—
7% Convertible Debentures	44,612	42,515
Royal Gold loan	—	18,817
Vendor agreement	—	10,803
Total long term debt	$ 73,224	$ 79,741
Current portion	$ 27,482	$ 15,864
Long term portion	73,224	79,741
Total	$ 100,706	$ 95,605

Equipment financing credit facility

Bogoso/Prestea and Wassa maintained an equipment financing facility with Caterpillar Financial Services Corporation, with Golden Star as the guarantor of all amounts borrowed. The facility provided credit financing for mining equipment at a fixed interest rate of 6.5% . Amounts drawn under this facility were repayable over a period of two to five years. Each outstanding equipment loan was secured by the title of the specific equipment purchased with the loan until the loan was repaid in full.

Finance leases

The Company financed mining equipment at Wassa and Bogoso/Prestea through equipment financing leases. These finance leases are payable in equal installments over a period of 60 months and have implicit interest rates of 6.9% . Each outstanding finance lease is secured by the title of the specific equipment purchased with the lease until the lease has been repaid in full.

During the year ended December 31, 2018 , the Company entered into two financing lease agreements totaling $1.9 million for a period of 24 months .

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 has a term of 60 months from the date of initial drawdown and is secured by, among other things, Wassa's existing plant, and certain machinery and equipment having a specified value. The interest rate on the loan is three month LIBOR plus 8% , per annum, payable monthly in arrears beginning a month following the initial drawdown. Repayment of principal commences six months following the initial drawdown and is 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 has been drawn as at December 31, 2018.

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 loan is secured by, among other things, Wassa's existing plant, and certain machinery and equipment having a specified value. There are no prepayment penalties associated with Ecobank Loan IV and the loan is repayable within 60 months of initial drawdown. Repayment of principal commenced September 2018 and is thereafter payable quarterly in arrears. Interest is payable monthly in arrears at an interest rate equal to three month LIBOR plus a spread of 7.5% per annum.

Royal Gold loan

In July 2015, the Company through its subsidiary Caystar Finance Co. closed a $20.0 million term loan with RGI and subsequently drew down $20.0 million of the facility. The loan has a term of 4 years and is secured by, among other things, assets of Wassa and Bogoso/Prestea. Interest is payable based on the average daily London Bullion Market Association ("LBMA") gold price multiplied by 62.5% divided by 10,000 to a maximum interest rate of 11.5% per annum. Interest payments are to be made on the last business day of each fiscal quarter, commencing in the quarter which the funding occurred. The fair value of the loan is determined net of initial valuation of the warrants issued to RGI and financing fees incurred. Commencing June 30, 2017, the excess cash flow provision came into effect. No excess cash flow repayments were made.

For the year ended December 31, 2018, the interest rate was approximately 8% with a total of $0.8 million paid during the year. On June 28, 2018, the Company used Ecobank Loan IV to repay in full the $20.0 million Royal Gold loan.

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 may 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, 2018 , the fair value of the embedded derivative was $4.2 million (December 31, 2017 - $11.0 million). The revaluation gain of $6.8 million is recorded in the Statement of Operations (year ended December 31, 2017 - revaluation gain of $2.1 million). There were no conversions during the year (December 31, 2017 - gain on conversions of $2.1 million).

During the first quarter of 2017, a total of 1,889,110 shares were issued on conversion of $8.5 million principal amount of 7% Convertible Debentures. The Company recorded a net loss on conversions of $0.2 million . The Company also made make-whole interest payments of $1.4 million as a result of the conversions. There were no conversions during the rest of 2017. As at December 31, 2017, $51.5 million principal amount of 7% Convertible Debentures remained outstanding.

There were no conversions of the 7% Convertible Debentures during 2018 , therefore, as at December 31, 2018 , $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,	
	2018	2017
Beginning balance	$ 42,515	$ 47,617
Conversions	—	(6,947)
Accretion of 7% Convertible Debentures discount	2,097	1,845
Balance at the end of the period	$ 44,612	$ 42,515

Vendor agreement

On May 4, 2016, the Company entered into an agreement with 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 will be repaid in equal installments over 24 months commencing on January 31, 2018. Interest of 7.5% will accrue and be payable beginning in January 2017. A $2.7 million gain was recognized in Other Income on remeasurement of the deferral during the second quarter of 2016.

Schedule of payments on outstanding debt as of December 31, 2018 :

	Year ending December 31, 2019	Year ending December 31, 2020	Year ending December 31, 2021	Year ending December 31, 2022	Year ending December 31, 2023	Maturity
Finance leases						
Principal	$ 1,151	$ 532	$ —	$ —	$ —	2020
Interest	94	8	—	—	—	
Ecobank Loan III						
Principal	5,555	5,555	5,555	3,611	—	2022
Interest	1,739	1,189	632	101	—	
Ecobank Loan IV						
Principal	4,000	4,000	4,000	4,000	2,000	2023
Interest	1,645	1,250	847	448	74	
7% Convertible Debentures						
Principal	—	—	51,498	—	—	August 15, 2021
Interest	3,605	3,605	3,605	—	—	
Vendor agreement						
Principal	17,507	—	—	—	—	2019
Interest	1,072	—	—	—	—	
Total principal	$ 28,213	$ 10,087	$ 61,053	$ 7,611	$ 2,000	
Total interest	8,155	6,052	5,084	549	74	
	$ 36,368	$ 16,139	$ 66,137	$ 8,160	$ 2,074	

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, 2016		**67,071,290**	**$ 746,542**
Bought deal		6,272,790	26,203
Conversion of 7% Convertible Debentures		1,889,110	9,479
Shares issued under DSUs		233,539	521
Shares issued under options		4,750	16
Shares issued under warrants		644,736	2,450
Share issue costs		—	(2,044)
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**

a. On October 1, 2018, the Company completed a $125.7 million 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 $3.5 million and $3.0 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.

Dunkwa Properties

As part of the acquisition of the Dunkwa properties in 2003, the Company agreed to pay the seller a net smelter return royalty on future gold production from the Mansiso and Asikuma properties. As per the acquisition agreement, there will be no royalty due on the first 200,000 ounces produced from Mampon which is located on the Asikuma property. 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.

Operating leases and capital commitments

The Company is a party to certain contracts relating to operating leases, office rent and capital commitments. Future minimum payments under these agreements as at December 31, 2018 are as follows:

Less than 1 year	$	1,383
Between 1 and 5 years		183
More than 5 years		—
Total	$	1,566

15. SHARE-BASED COMPENSATION

Share-based compensation expenses recognized in general and administrative expense in the Statements of Operations and Comprehensive (Loss)/Income, are as follows:

	For the Years Ended December 31,	
	2018	2017
Share options	$ 1,248	$ 1,229
Deferred share units	565	387
Share appreciation rights	(502)	482
Performance share units	(33)	10,456
	$ 1,278	$ 12,554

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 for up to 7,000,000 shares, of which 1,917,767 are available for grant as of December 31, 2018 (December 31, 2017 - 2,114,517). 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 year ended December 31, 2018 and 2017 were based on the weighted average assumptions noted in the following table:

	For the Years Ended December 31,	
	2018	2017
Expected volatility	70.06%	73.70%
Risk-free interest rate	2.39%	1.86%
Expected lives	5.68 years	5.99 years

The weighted average fair value per option granted during the year ended December 31, 2018 was $2.82 CAD (year ended December 31, 2017 - $4.20 CAD). As at December 31, 2018 , there was $0.6 million of share-based compensation expense (December 31, 2017 - $0.5 million) relating to the Company's share options to be recorded in future periods. For the year ended December 31, 2018 , the Company recognized an expense of $1.2 million (year ended December 31, 2017 - $1.2 million).

A summary of option activity under the Company's Stock Option Plan during the years ended December 31, 2018 and 2017 is as follows:

	Options ('000)	Weighted–Average Exercise price ($CAD)	Weighted–Average Remaining Contractual Term (Years)
Outstanding as of December 31, 2016	3,223	6.45	5.7
Granted	470	6.40	9.7
Exercised	(5)	2.75	7.3
Forfeited	(128)	11.35	1.8
Expired	(234)	10.95	0
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
Exercisable as of December 31, 2017	2,536	6.30	5.1
Exercisable as of December 31, 2018	2,664	5.42	5.5

The number of options outstanding by strike price as of December 31, 2018 is shown in the following table:

	Options outstanding			Options exercisable	
Range of exercise price (Cdn$)	**Number outstanding at December 31, 2018 ('000)**	**Weighted-average remaining contractual life (years)**	**Weighted-average exercise price (Cdn$)**	**Number outstanding at December 31, 2018 ('000)**	**Weighted-average exercise price (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

The number of options outstanding by strike price as of December 31, 2017 is shown in the following table:

	Options outstanding			Options exercisable	
Range of exercise price (Cdn$)	**Number outstanding at December 31, 2017 ('000)**	**Weighted-average remaining contractual life (years)**	**Weighted-average exercise price (Cdn$)**	**Number outstanding at December 31, 2017 ('000)**	**Weighted-average exercise price (Cdn$)**
1.50 to 2.50	617	7	1.90	500	1.90
2.51 to 3.50	536	8	2.80	277	2.80
3.51 to 4.50	616	5.8	4.30	589	4.30
4.51 to 5.50	52	8.8	4.80	26	4.90
5.51 to 7.50	513	8.5	6.40	177	6.40
7.51 to 10.50	691	2.3	8.90	666	9.00
10.51 to 17.65	302	2.5	15.10	302	15.10
	3,326	5.9	5.93	2,536	6.30

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”). The DSU Plan has been implemented for directors and executive officers of the Company in order to (i) encourage the directors and executive officers of the Company to own Common Shares of the Company and to facilitate such Common Share ownership; and (ii) provide directors and executive officers of the Company with incentives in the form of deferred share units ("DSUs") in order to allow the Company to reduce its reliance on stock options and other long-term incentive plans for the same purposes, so as to conform with current best practices regarding directors’ and executive officers’ compensation. The DSU Plan is administered by the Compensation Committee. 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 have 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, 2018 , the DSUs that were granted vested immediately and a compensation expense of $0.6 million was recognized for these grants (year ended December 31, 2017 - $0.4 million). As of December 31, 2018 , there was no unrecognized compensation expense related to DSUs granted under the Company's DSU Plan.

A summary of DSU activity during the year ended December 31, 2018 and 2017 :

	For the Years Ended December 31,	
	2018	2017
Number of DSUs, beginning of period ('000)	1,018	1,146
Granted	150	105
Exercised	(82)	(233)
Number of DSUs, end of period ('000)	1,086	1,018

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, 2018 , there was approximately $0.3 million of total unrecognized compensation cost related to unvested SARs (December 31, 2017 - $0.4 million). For the year ended December 31, 2018 , the Company recognized a recovery of $0.5 million related to these cash settled awards (year ended December 31, 2017 - $0.5 million expense).

A summary of the SARs activity during the year ended December 31, 2018 and 2017 :

	For the Years Ended December 31,	
	2018	2017
Number of SARs, beginning of period ('000)	533	537
Granted	304	292
Exercised	(36)	(158)
Forfeited	(127)	(138)
Number of SARs, end of period ('000)	674	533

Performance share units ("PSUs")

On January 1, 2014, the Company adopted a Performance Share Unit ("PSU") Plan. 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 period. The cash award is determined by multiplying the number of 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 PSU Plan. As the Company is required to settle these awards in cash, they are accounted for as liability awards with corresponding compensation expense recognized.

For the year ended December 31, 2018 , the Company recognized $0.4 million recovery related to PSU's (year ended December 31, 2017 - $10.1 million). As at December 31, 2018 , the PSU liability of $6.4 million is recognized on the Balance Sheet as current portion of other liability.

A summary of the PSU activity during the year ended December 31, 2018 and 2017 :

	For the Years Ended December 31,	
	2018	2017
Number of PSUs, beginning of period ('000)	2,721	3,096
Settled	(1,548)	(375)
Number of PSUs, end of period ('000)	1,172	2,721

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).

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, 2018 , the Company recognized $0.3 million expense (year ended December 31, 2017 - $0.3 million).

A summary of the PRSU activity during the year ended December 31, 2018 and 2017 :

	For the Years Ended December 31,	
	2018	2017
Number of PRSUs, beginning of period ('000)	339	—
Granted	480	339
Forfeited	(28)	—
Number of PRSUs, end of period ('000)	791	339

16. (LOSS)/INCOME PER COMMON SHARE

During the year ended December 31, 2018 , the Company incurred a net loss therefore the shares for the period are not dilutive. The following table provides a reconciliation between basic and diluted (loss)/income per common share:

	For the Years Ended December 31,	
	2018	2017
Net (loss)/income attributable to Golden Star shareholders	$ (18,123)	$ 38,771
Adjustments:		
Interest expense on 7% Convertible Debentures	—	3,657
Accretion of 7% Convertible Debentures discount	—	1,845
Gain on fair value of 7% Convertible Debentures embedded derivative	—	(2,095)
Diluted (loss)/income	$ (18,123)	$ 42,178
Weighted average number of basic shares (millions) [1]	84.3	74.7
Dilutive securities:		
Options	—	0.5
Deferred share units	—	1.1
Performance and restricted share units	—	0.3
7% Convertible Debentures	—	11.6
Weighted average number of diluted shares (millions)	84.3	88.2
(Loss)/income per share attributable to Golden Star shareholders:		
Basic	$ (0.21)	$ 0.52
Diluted	$ (0.21)	$ 0.48

[1] See Note 13 for share consolidation details.

17. REVENUE

Revenue includes the following components:

	For the Years Ended December 31,	
	2018	2017
Revenue - Streaming Agreement		
Cash payment proceeds	$ 6,036	$ 6,138
Deferred revenue recognized	13,738	14,156
	19,774	20,294
Revenue - Spot sales	253,243	295,203
Total revenue	$ 273,017	$ 315,497

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,	
	2018	2017
Contractors	$ 32,536	$ 41,297
Electricity	17,663	20,558
Fuel	7,347	11,137
Raw materials and consumables	41,910	51,996
Salaries and benefits	58,501	53,582
Transportation costs	1,751	2,116
General and administrative	9,490	7,695
Other	6,830	8,997
Mine operating expenses	$ 176,028	$ 197,378
Severance charges	14,858	9,232
Operating costs from metal inventory	12,886	167
Inventory net realizable value adjustment and write-off	5,655	2,410
Royalties	14,302	17,295
	$ 223,729	$ 226,482

19. FINANCE EXPENSE, NET

Finance income and expense includes the following components:

	For the Years Ended December 31,	
	2018	2017
Interest income	$ (559)	$ (72)
Interest expense, net of capitalized interest (see Note 7)	13,281	6,039
Interest on financing component of deferred revenue (see Note 11)	4,750	—
Net foreign exchange gain	(91)	(172)
Accretion of rehabilitation provision	691	1,245
Conversion make-whole payment	—	1,445
	$ 18,072	$ 8,485

On February 1, 2018, Prestea Underground mine achieved commercial production, therefore no capitalized interest was recorded since.

20. OTHER INCOME

Other income includes the following components:

	For the Years Ended December 31,	
	2018	2017
(Gain)/loss on disposal of assets	(305)	672
Gain on reduction of asset retirement obligations	(3,080)	(4,945)
Other income	(218)	(73)
	$ (3,603)	$ (4,346)

21. RELATED PARTY TRANSACTIONS

There were no material related party transactions for the years ended December 31, 2018 and 2017 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,	
	2018	2017
Salaries, wages, and other benefits	$ 3,753	$ 2,800
Bonuses	1,052	787
Share-based compensation	1,965	7,487
	$ 6,770	$ 11,074

22. PRINCIPAL SUBSIDIARIES

The consolidated financial statements include the accounts of the Company and all of its subsidiaries at December 31, 2018 . 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,	
	2018	2017	2018	2017
Non-controlling interest percentage	10%	10%	10%	10%
Current assets	$ 129,656	$ 94,760	$ 13,633	$ 25,023
Current liabilities	150,404	160,725	1,152,156	1,058,732
	(20,748)	(65,965)	(1,138,523)	(1,033,709)
Non-current assets	141,262	138,416	134,090	131,245
Non-current liabilities	42,588	25,016	62,737	76,373
	98,674	113,400	71,353	54,872
Net assets/(liabilities)	77,926	47,435	(1,067,170)	(978,837)
Non-controlling interest	$ 15,605	$ 12,562	$ (87,578)	$ (78,587)

Summarized income statement

	Wassa		Prestea	
	For the years ended December 31,		For the years ended December 31,	
	2018	2017	2018	2017
Revenue	$ 190,016	$ 156,908	$ 93,134	$ 138,295
Net income/(loss) and comprehensive income/(loss)	30,491	16,924	(88,332)	4,619

Summarized cash flows

	Wassa		Prestea	
	For the years ended December 31,		For the years ended December 31,	
	2018	2017	2018	2017
Cash flows provided by/(used in) operating activities	57,897	27,486	(77,115)	3,505
Cash flows used in investing activities	(34,984)	(21,744)	(11,956)	(43,616)
Cash flows (used in)/provided by financing activities	(31,112)	7,468	85,581	42,078

23. 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
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
2017					
Revenue	$ 167,376	$ 148,121	$ —	$ —	$ 315,497
Mine operating expenses	115,625	81,753	—	—	197,378
Severance charges	6,316	2,916	—	—	9,232
Operating costs from/(to) metal inventory	5,080	(4,913)	—	—	167
Inventory net realizable value adjustment and write-off	2,410	—	—	—	2,410
Royalties	8,652	8,643	—	—	17,295
Cost of sales excluding depreciation and amortization	138,083	88,399	—	—	226,482
Depreciation and amortization	20,052	11,740	—	—	31,792
Mine operating margin	9,241	47,982	—	—	57,223
Net income attributable to non-controlling interest	1,693	495	—	—	2,188
Net income/(loss) attributable to Golden Star	$ 17,644	$ 50,050	$ (3,701)	$ (25,222)	$ 38,771
Capital expenditures	$ 21,583	$ 48,055	$ —	$ —	$ 69,638

Segmented Assets

The following table presents the segmented assets:

	Wassa	Prestea	Other	Corporate	Total
December 31, 2018					
Total assets	$ 181,446	$ 147,815	$ 898	$ 87,828	$ 417,987
December 31, 2017					
Total assets	$ 195,180	$ 158,715	$ 4,257	$ 2,237	$ 360,389

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 our current customer would not materially delay or disrupt revenue.

24. SUPPLEMENTAL CASH FLOW INFORMATION

During the year ended December 31, 2018 and 2017 , there was no payment of income taxes. The Company paid $7.9 million of interest during the year ended December 31, 2018 (the year ended December 31, 2017 - $7.3 million).

Changes in working capital for the year ended December 31, 2018 and 2017 are as follows:

	For the Years Ended December 31,	
	2018	2017
Decrease in accounts receivable	$ 215	$ 3,871
Decrease/(increase) in inventories	9,187	(7,684)
Increase in prepaids and other	(737)	(2,132)
Decrease in accounts payable and accrued liabilities	(25,837)	(1,503)
Total changes in working capital	$ (17,172)	$ (7,448)

Other includes the following components:

	For the Years Ended December 31,	
	2018	2017
(Gain)/loss on disposal of assets	$ (305)	$ 672
Inventory net realizable value adjustment and write-off	5,544	2,410
Loss on fair value of 5% Convertible Debentures	—	317
Gain on fair value of warrants	—	(86)
Loss/(gain) on fair value of marketable securities	175	(64)
Accretion of vendor agreement	731	731
Accretion of rehabilitation provisions (see Note 10)	691	1,245
Amortization of financing fees	1,322	378
Accretion of 7% Convertible Debentures discount	2,097	1,845
Gain on reduction of rehabilitation provisions	(3,080)	(4,945)
Loss on conversion of 7% Convertible Debentures, net	—	165
Gain on warrant exercise	—	(193)
Interest on financing component of deferred revenue (see Note 11)	4,750	—
	$ 11,925	$ 2,475

Reconciliation of debt arising from financing activities during the year ended December 31, 2018 and 2017 :

	Equipment financing credit facility	Finance leases	Ecobank Loan III	Ecobank Loan IV	Vendor agreement	5% Convertible Debentures	7% Convertible Debentures	Royal Gold loan	Total
December 31, 2016	$ 1,119	$ 1,959	$ —	$ —	$ 22,338	$ 13,294	$ 47,617	$ 18,496	$ 104,823
Cash flows									
Proceeds from debt agreements	—	—	10,000	—	—	—	—	—	10,000
Principal payments on debt	(972)	(1,226)	—	—	—	—	—	—	(2,198)
Fair value loss on the 5% Convertible Debentures	—	—	—	—	—	317	—	—	317
5% Convertible Debentures repayment	—	—	—	—	—	(13,611)	—	—	(13,611)
Non-cash changes									
Capitalized loan fee	—	—	(499)	—	—	—	—	—	(499)
New lease	—	765	—	—	—	—	—	—	765
Conversion of 7% Convertible Debentures	—	—	—	—	—	—	(6,947)	—	(6,947)
Accretion of debt	—	—	58	—	731	—	1,845	321	2,955
December 31, 2017	$ 147	$ 1,498	$ 9,559	$ —	$ 23,069	$ —	$ 42,515	$ 18,817	$ 95,605
Cash flows									
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)
Non-cash changes									
Capitalized loan fee	—	—	—	(340)	—	—	—	—	(340)
New 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

25. 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.

The following table shows our contractual obligations as at December 31, 2018 :

	Payment due (in thousands) by period				
(Stated in thousands of U.S dollars)	Less than 1 year	1 to 3 years	3 to 5 years	More than 5 years	Total
Accounts payable and accrued liabilities [1]	$ 84,894	$ —	$ —	$ —	$ 84,894
Debt [2]	28,213	78,751	2,000	—	108,964
Interest on long term debt	8,155	11,685	74	—	19,914
Purchase obligations	13,762	—	—	—	13,762
Rehabilitation provisions [3]	7,665	27,908	26,283	11,613	73,469
Total	$ 142,689	$ 118,344	$ 28,357	$ 11,613	$ 301,003

[1] Includes the current portion of the PSU liabilities of $6.4 million .

[2] Includes the 7% Convertible Debentures maturing in August 2021, the finance leases and the vendor agreement. Golden Star may not redeem the 7% Convertible Debentures prior to August 15, 2019, 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 presentation shown above assumes payment is made in cash and also assumes no conversions of the 7% Convertible Debentures into common shares by the holders prior to the maturity date.

[3] Rehabilitation provisions indicates the expected undiscounted cash flows for each period.

As at December 31, 2018 , the Company has current assets of $140.2 million compared to current liabilities of $134.4 million . As at December 31, 2018 , the Company had a cash balance of $96.5 million .

The Company expects to meet its short-term financial needs through its cash on hand, 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. Our 7% Convertible Debentures, vendor agreement and the outstanding loans under our equipment financing facility bear interest at a fixed rate and are not subject to changes in interest payments. The Ecobank Loan III interest rate is three month LIBOR plus 8% , per annum. Based on our current $20.3 million outstanding balance on Ecobank Loan III, a 100 basis points change in the three month LIBOR rate would result in a nominal change in interest expense. The Ecobank Loan IV interest rate is three month LIBOR plus a spread of 7.5% per annum. Based on our current $18.0 million outstanding balance on Ecobank Loan IV, a 100 basis points change in the three month 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 2018 and 2017, we had no currency related derivatives. At December 31, 2018 and December 31, 2017 , we held $1.9 million and $3.8 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 $20.6 million and $19.6 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. As at December 31, 2018 , the Company did not have any outstanding gold price derivative 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.

26. 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, 2018	As of December 31, 2017
Equity	$ 42,037	$ (41,754)
Long-term debt	73,224	79,741
	$ 115,261	$ 37,987
Cash and cash equivalents	96,507	27,787
	$ 211,768	$ 65,774

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 or Standard & Poor's. 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.

Exhibit 99.4

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, Samuel T. Coetzer, 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/ Samuel T. Coetzer
Samuel T. Coetzer
President and Chief Executive Officer

Toronto, Canada
March 29, 2019

Exhibit 99.5

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, P. André van Niekerk, 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/ P. André van Niekerk
P. André van Niekerk
Executive Vice President and Chief Financial Officer

Toronto, Canada
March 29, 2019

Exhibit 99.6

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, 2018 , Samuel T. Coetzer, 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/ Samuel T. Coetzer
Samuel T. Coetzer
President and Chief Executive Officer

Toronto, Canada
March 29, 2019

Exhibit 99.7

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, 2018 , P. André van Niekerk, 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/ P. André van Niekerk
P. André van Niekerk
Executive Vice President and Chief Financial Officer

Toronto, Canada
March 29, 2019

Exhibit 99.8

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, 2018 of Golden Star Resources Ltd. (the Company) of our report dated February 19, 2019, 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 Forms S-8 (Nos. 333-105820, 333-105821, 333-118958, 333-169047, 333-175542, 333-211926 and 333-218064) and F-10 No. 333-220478 of Golden Star Resources Ltd. of our report dated February 19, 2019 referred to above.

(signed) "PricewaterhouseCoopers LLP"

Chartered Professional Accountants, Licensed Public Accountants

Toronto, Ontario
Canada

March 29, 2019

Exhibit 99.9

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, 2018 (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, 2018 , (B) the Company's Management's Discussion and Analysis for the year ended December 31, 2018 and (C) 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. 333-220478 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
Executive Vice President, Chief Technical Officer

March 29, 2019

Exhibit 99.10

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, 2018 (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, 2018 , (B) the Company's Management's Discussion and Analysis for the year ended December 31, 2018 , (C) the technical report entitled "NI 43-101 Technical Report on a Feasibility Study of the Wassa open pit mine and underground project in Ghana" effective date December 31, 2014 and filed on May 8, 2015 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. 333-220478 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 29, 2019

Exhibit 99.11

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, 2018 (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, 2018 , (B) the Company's Management's Discussion and Analysis for the year ended December 31, 2018 , (C) the technical report entitled "NI 43-101 Technical Report on a Feasibility Study of the Wassa Open Pit Mine and Underground Project in Ghana" effective date December 31, 2014 and filed on May 8, 2015, (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. 333-220478 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/ Michael Beare
Michael Beare

March 29, 2019

Exhibit 99.12

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, 2018 (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, 2018 , (B) the Company's Management's Discussion and Analysis for the year ended December 31, 2018 , (C) the technical report entitled "NI 43-101 Technical Report on a Feasibility Study of the Wassa Open Pit Mine and Underground Project in Ghana" effective date December 31, 2014 and filed on May 8, 2015, (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. 333-220478 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/ Rod Redden
Rod Redden

March 29, 2019

Exhibit 99.13

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, 2018 (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, 2018 , (B) the Company's Management's Discussion and Analysis for the year ended December 31, 2018 , (C) the technical report entitled "NI 43-101 Technical Report on a Feasibility Study of the Wassa Open Pit Mine and Underground Project in Ghana" effective date December 31, 2014 and filed on May 8, 2015, (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. 333-220478 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/ Neil Marshall
Neil Marshall

March 29, 2019

Exhibit 99.14

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, 2018 (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, 2018 , (B) the Company's Management's Discussion and Analysis for the year ended December 31, 2018 , (C) the technical report entitled "NI 43-101 Technical Report on a Feasibility Study of the Wassa Open Pit Mine and Underground Project in Ghana" effective date December 31, 2014 and filed on May 8, 2015, (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. 333-220478 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/ Chris Bray
Chris Bray

March 29, 2019

Exhibit 99.15

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, 2018 (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, 2018 , (B) the Company's Management's Discussion and Analysis for the year ended December 31, 2018 , (C) the technical report entitled "NI 43-101 Technical Report on a Feasibility Study of the Wassa Open Pit Mine and Underground Project in Ghana" effective date December 31, 2014 and filed on May 8, 2015, (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. 333-220478 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/ Paul Riley
Paul Riley

March 29, 2019