

Expanding Production and Reducing Costs

A photograph of four men in mining attire (hard hats, safety vests, and work clothes) standing on a rocky, gravel-covered ground at night. They are looking towards a large, illuminated mining machine, possibly a conveyor or crusher, which has its lights on. The background is dark, suggesting a night scene at a mining operation.

**BMO GLOBAL
METALS & MINING
CONFERENCE
FEBRUARY 2017**

Disclaimer

SAFE HARBOR: Some statements contained in this presentation are forward-looking statements or forward-looking information (collectively, “forward-looking statements”) within the meaning of the United States Private Securities Litigation Reform Act of 1995 and applicable Canadian securities laws. Investors are cautioned that forward-looking statements are inherently uncertain and involve risks and uncertainties that could cause actual results to differ materially. Such statements include comments regarding: the expansion of production and reduction of costs at Golden Star’s projects; the exploration upside of the Company’s projects and ability of the Company to increase mine lives and Mineral Resources and Mineral Reserves; the ability of the Company to transform into a high grade, low cost gold producer; the impact of Wassa Underground and Prestea Underground on the Company’s production profile, cost profile, cash operating cost per ounce and AISC per ounce; the timing for commercial production at Wassa Underground and Prestea Underground; the timing for mining first longitudinal stopes and first transverse stopes at B Shoot of Wassa Underground; the achievement of full production rate at Wassa Underground and life of mine average production; the achievement of 2017 production; production, cash operating cost and capital expenditure guidance for 2017; ore grade, production and capital expenditures at Mampon; the timing for commencing mining and production at Mampon; the timing for mobilizing the underground mining contractor, pre-development of Mineral Resources, blasting of the first stope and commencing commercial production at Prestea Underground; the ability to expand Mineral Reserves and extend the life of mine at Prestea Underground and Wassa Underground through exploration; the timing for releasing the Company’s exploration strategy; the ability to convert Mineral Resources into Mineral Reserves; the timing for incurring 2017 capital expenditures; and the potential for growth of Golden Star’s share price. Factors that could cause actual results to differ materially include timing of and unexpected events at the Bogoso/Prestea and/or the Wassa processing plants; variations in ore grade, tonnes mined, crushed or milled; delay or failure to receive board or government approvals and permits; construction delays; the availability and cost of electrical power; timing and availability of external financing on acceptable terms or at all; technical, permitting, mining or processing issues, including difficulties in establishing the infrastructure for Wassa Underground or Prestea Underground, inconsistent power supplies, plant and/or equipment failures and an inability to obtain supplies and materials on reasonable terms (including pricing) or at all; changes in U.S. and Canadian securities markets; heavy rainfall and flooding of underground mines; and fluctuations in gold price and input costs and general economic conditions. There can be no assurance that future developments affecting the Company will be those anticipated by management. Please refer to the discussion of these and other factors in our Annual Information Form for the year ended December 31, 2015 filed on SEDAR at www.sedar.com. The forecasts contained in this presentation constitute management’s current estimates, as of the date of this presentation, with respect to the matters covered thereby. We expect that these estimates will change as new information is received and that actual results will vary from these estimates, possibly by material amounts. While we may elect to update these estimates at any time, we do not undertake to update any estimate at any particular time or in response to any particular event. Investors and others should not assume that any forecasts in this presentation represent management’s estimate as of any date other than the date of this presentation.

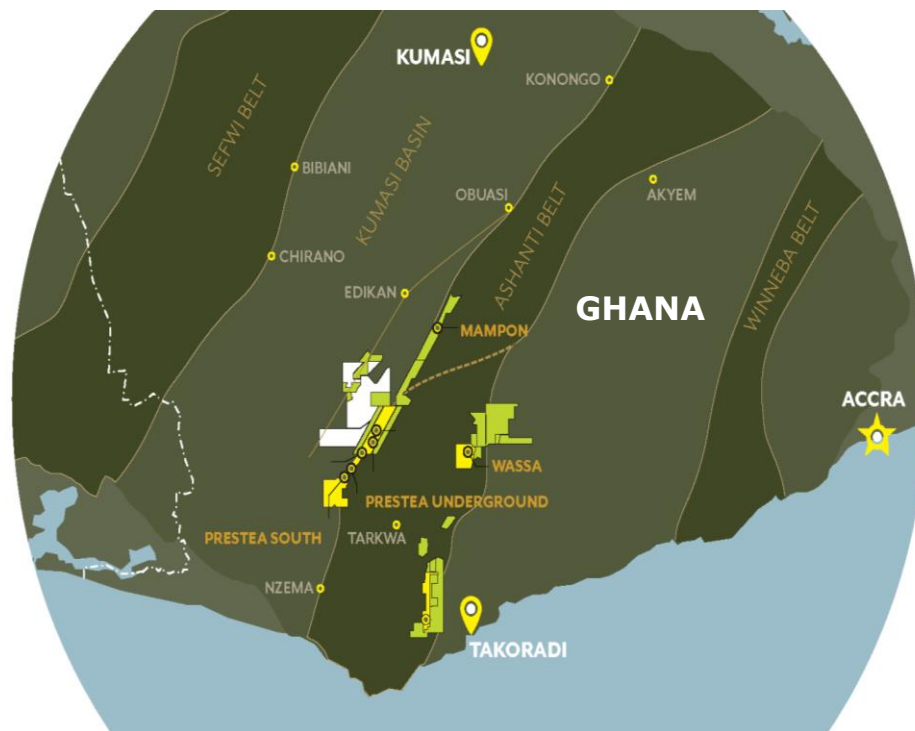
NON-GAAP FINANCIAL MEASURES: In this presentation, we use the terms “cash operating cost per ounce”, “all-in sustaining cost per ounce”, “AISC per ounce”, “Adjusted Net Loss”, “Adjusted Net Loss/Share”, “Cash operating margin per ounce” and “Cash Flow from/(used in) operations”. These terms should be considered as Non-GAAP Financial Measures as defined in applicable Canadian and United States securities laws and should not be considered in isolation or as a substitute for measures of performance prepared in accordance with International Financial Reporting Standards (“IFRS”). “Cash operating cost per ounce” for a period is equal to the cost of sales excluding depreciation and amortization for the period less royalties, the cash component of metals inventory net realizable value adjustments and severance charges divided by the number of ounces of gold sold during the period. “All-in sustaining costs per ounce” commences with cash operating costs and then adds sustaining capital expenditures, corporate general and administrative costs, mine site exploratory drilling and greenfield evaluation costs and environmental rehabilitation costs, divided by the number of ounces of gold sold during the period. This measure seeks to represent the total costs of producing gold from operations. These measures are not representative of all cash expenditures as they do not include income tax payments or interest costs. In order to indicate to stakeholders the Company’s earnings excluding the non-cash (gain)/loss on the fair value of debentures, non-cash impairment charges and severance charges, the Company calculates “Adjusted Net Earnings/(Loss)” and “Adjusted Net Earnings/(Loss) per share” to supplement the condensed interim consolidated financial statements. “Cash operating margin per ounce” is calculated as gold price minus cash operating cost per ounce. “Cash flow from/(used in) operations” is calculated by subtracting the “Changes in working capital” from “Net cash provided by operating activities” as found in the statements of cash flows. These measures are not necessarily indicative of operating profit or cash flow from operations as would be determined under IFRS. Changes in numerous factors including, but not limited to, mining rates, milling rates, gold grade, gold recovery, and the 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 the same or similar to the measures of other gold mining companies, but may not be comparable to similarly titled measures in every instance. Please see our “Management’s Discussion and Analysis of Financial Condition and Results of Operations for the year ended December 31, 2016” for a reconciliation of these Non-GAAP measures to the nearest IFRS measure.

INFORMATION: The information contained in this presentation has been obtained by Golden Star from its own records and from other sources deemed reliable, however no representation or warranty is made as to its accuracy or completeness. The technical information relating to Golden Star’s material properties disclosed herein is based upon technical reports prepared and filed pursuant to National Instrument 43-101 - Standards of Disclosure for Mineral Projects (“NI 43-101”) and other publicly available information regarding the Company, including the following: (i) “NI 43-101 Technical Report on a Feasibility Study of the Wassa Open Pit Mine and Underground Project in Ghana” effective December 31, 2014; (ii) “NI 43-101 Technical Report on Resources and Reserves, Golden Star Resources Ltd., Bogoso Prestea Gold Mine, Ghana” effective December 31, 2013, and (iii) “NI 43-101 Technical Report on a Feasibility Study of the Prestea Underground gold project in Ghana” effective November 5, 2015. Additional information is included in Golden Star’s Annual Information Form for the year ended December 31, 2015 which is filed on SEDAR. Mineral Reserves were prepared under the supervision of Dr. Martin Raffield, Senior Vice President Technical Services for the Company. Dr. Raffield is a “Qualified Person” as defined by NI 43-101. The Qualified Person reviewing and validating the estimation of the Mineral Resources is S. Mitchel Wasel, Golden Star Resources Vice President of Exploration.

CURRENCY: All monetary amounts refer to United States dollars unless otherwise indicated.

Why Invest In Golden Star?

- West African-focused, mid-tier gold producer with two producing mines in Ghana
- High grade development asset, Prestea Underground (Mineral Reserves averaging 14.02g/t) - production is expected to expand and costs to continue to reduce
- Strong exploration upside potential - focused on increasing the mine lives of current operations
- Experienced management team with a track record of discovery and project delivery
- Undervalued compared to peer group and with robust liquidity through NYSE MKT listing



Transforming into a high grade, non-refractory, low cost gold producer

Experienced Management and Technical Leadership



Sam Coetzer, President & CEO

- Mining engineer with over 26 years' experience with Kinross, Xstrata Nickel, Xstrata Coal and Placer Dome
- Previously SVP South American Operations and managed integration of Red Back Mining for Kinross



André van Niekerk, EVP & Chief Financial Officer

- Joined GSR in 2006 - 5 years in Ghana as GSR's Head of Finance and Business Operations
- Previously VP, Financial Controller
- Trained at KPMG



Daniel Owiredù, EVP & Chief Operating Officer

- 20 years' experience in West African mining, based in Ghana
- Previously Deputy COO for AngloGold - managed construction and operation of the Bibiani, Siguiri and Obuasi mines



Martin Raffield, SVP, Project Development & Technical Services

- Ph.D. geotechnical engineering & P. Engineering
- Previously worked for SRK, Placer Dome and Breakwater Resources
- Based at Prestea mine in Ghana



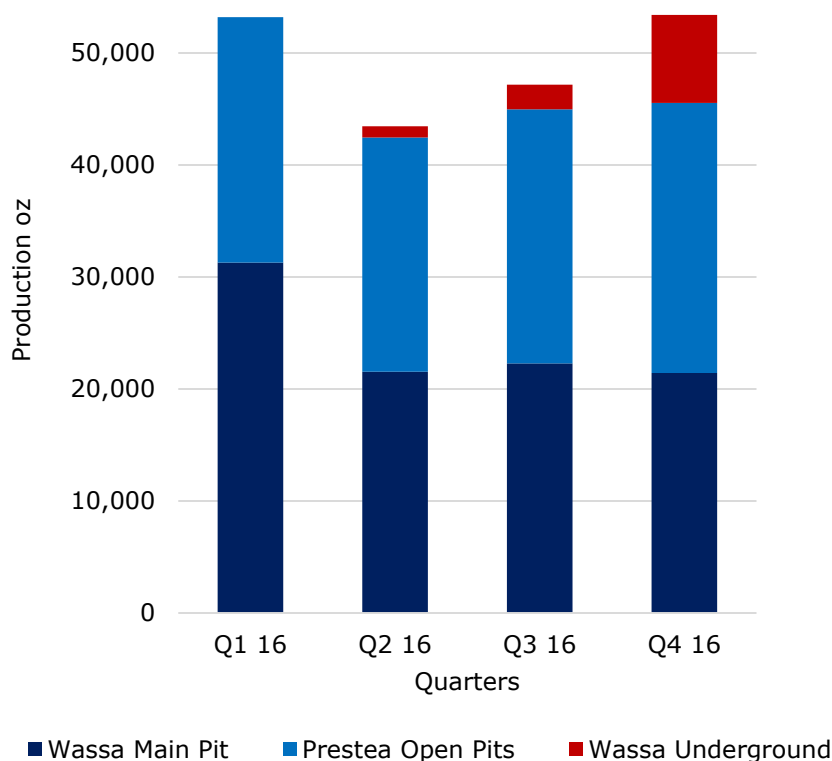
Mitch Wasel, VP Exploration

- Joined GSR in 1993
- Based in Ghana for GSR for past 17 years
- Previously spent 10 years in gold & base metal exploration in north western Canada

2016 Guidance Achieved on All Metrics

2016 Production in the Top Half of the Guidance Range

2016 Quarterly Gold Production

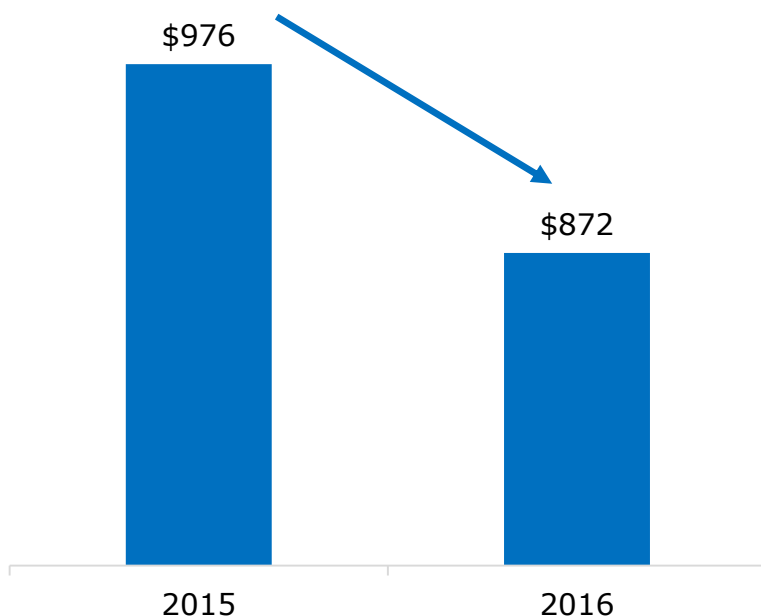


- Gold production of 194,054oz in 2016
- 2016 gold production by asset:
 - Wassa Main Pit: 93,319oz
 - Wassa Underground: 11,062oz
 - Prestea Open Pits: 89,673oz
- Gold production of 53,403oz in Q4 2016 – strongest quarterly performance of 2016
- Wassa Underground's mining rates accelerated strongly during Q4 – 257% increase in production compared to Q3
- Second consecutive record quarter of production for Prestea Open Pits
- Cash of \$21.8m as at December 31, 2016¹

Cash Operating Costs Expected to Continue to Reduce

Significant change in Golden Star's cost structure following cessation of refractory production

Cash Operating Cost Per Ounce¹



- Cash operating cost¹ guidance achieved in the middle of guidance range
- 11% decrease in cash operating cost per ounce¹ to \$872 compared to 2015 reflecting GSR's transition into a low cost, non-refractory producer
- AISC per ounce¹ of \$1,093 in 2016, 5% decrease compared to 2015
- Q4 2016 cash operating cost per ounce¹ of \$872 due to fewer ounces produced from Wassa Main Pit and 31% decrease in head grade
- Cash operating cost¹ and AISC¹ per ounce expected to continue to reduce as production from high grade underground mines ramps up

2017 Guidance: Production and Cash Operating Costs¹

2017 production guidance 31-44% higher than 2016 production results

Gold Production and Cash Operating Cost ¹ Guidance By Asset			
Asset	Gold Production (oz)	Cash Operating Cost ¹ (\$/oz)	All-In Sustaining Cost ¹ (\$/oz)
Wassa Main Pit	85,000-95,000	-	-
Wassa Underground	60,000-65,000	-	-
Wassa Consolidated	145,000-160,000	830-915	-
Prestea Open Pits ^{2,3}	65,000-70,000	-	-
Prestea Underground	45,000-50,000	-	-
Prestea Consolidated	110,000-120,000	715-780	-
CONSOLIDATED	255,000-280,000	780-860	970-1,070

- 2017 gold production expected to be weighted towards H2 2017 due to:
 - Wassa Underground transverse stopes expected to be accessed in Q3 2017
 - Commercial production at Prestea Underground expected in mid-2017
 - Production from Mampon deposit expected in Q2 2017
- Gold production in Q1 and Q2 2017 expected to be in line with Q4 2016
- Cash operating cost¹ per ounce expected to be higher in H1 2017 but decreasing in H2 as higher grade ore becomes available

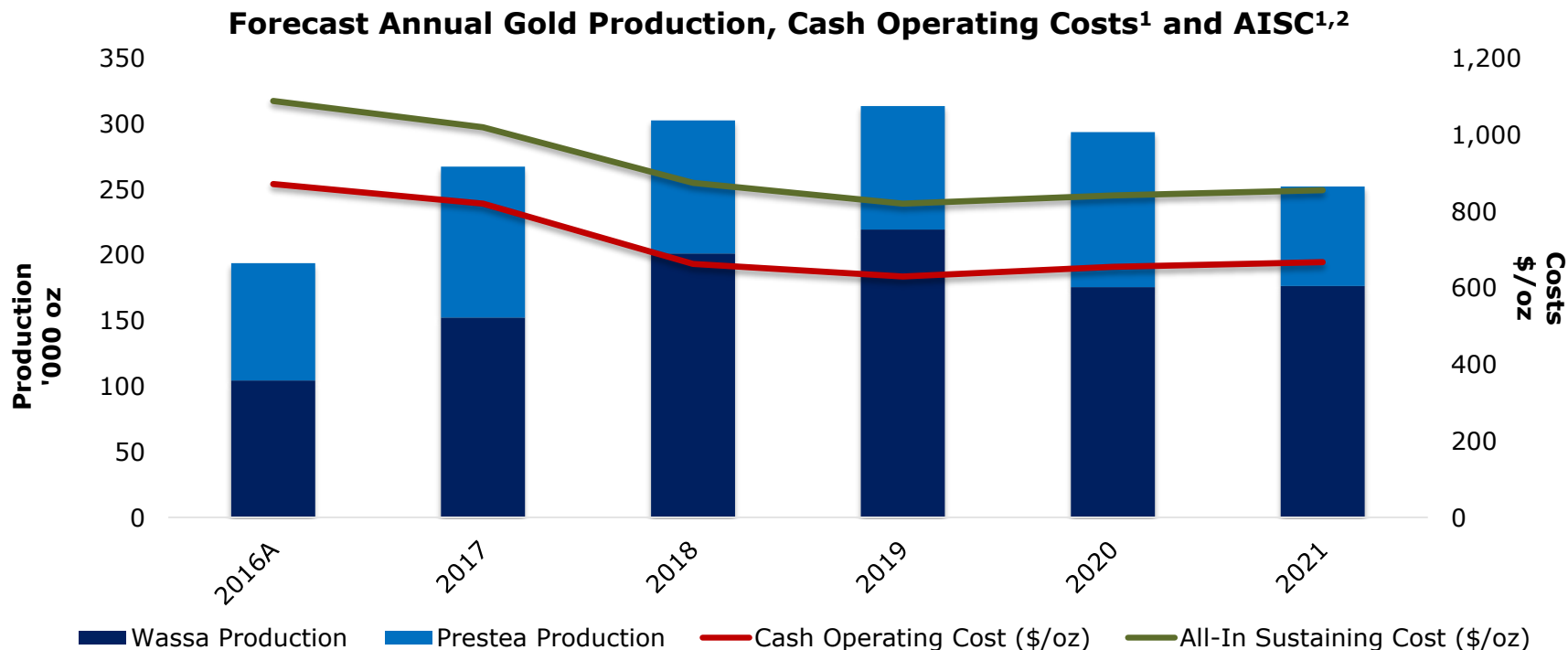
2017 Guidance: Capital Expenditures

Capital Expenditures Guidance By Asset			
Asset	Sustaining Capital (\$m)	Development Capital (\$m)	Total Capital Expenditures (\$m)
Wassa Main Pit and Surface Infrastructure	5.9	1.1	7.0
Wassa Underground	9.0	3.4	12.4
Prestea Open Pits	5.0	-	5.0
Prestea Underground ¹ and Processing Plant	0.4	31.2	31.6
Exploration	-	2.4	2.4
TOTAL	20.3	38.1	58.4

- 2017 guidance for total capital expenditures of \$58m
- 54% of capital expenditures to be incurred at Prestea Underground
- Capital expenditures are expected to be higher in H1 2017 due to funds required for continued construction of Prestea Underground and accessing of Mampon deposit
- Capital expenditures expected to decrease in H2 2017 once Prestea Underground achieves commercial production

Capital expenditures weighted towards H1 2017

Expanding Production and Reducing Costs



- Average for the next 5 years from 2017 onwards²:
 - Production: 281,000oz/annum
 - Cash operating costs¹: \$695/oz
 - AISC¹: \$903/oz
- Significant exploration upside on current production profile

60% increase in production forecast between 2016 and 2019

OPERATIONS & EXPLORATION OVERVIEW

Wassa Gold Mine

Prestea Gold Mine



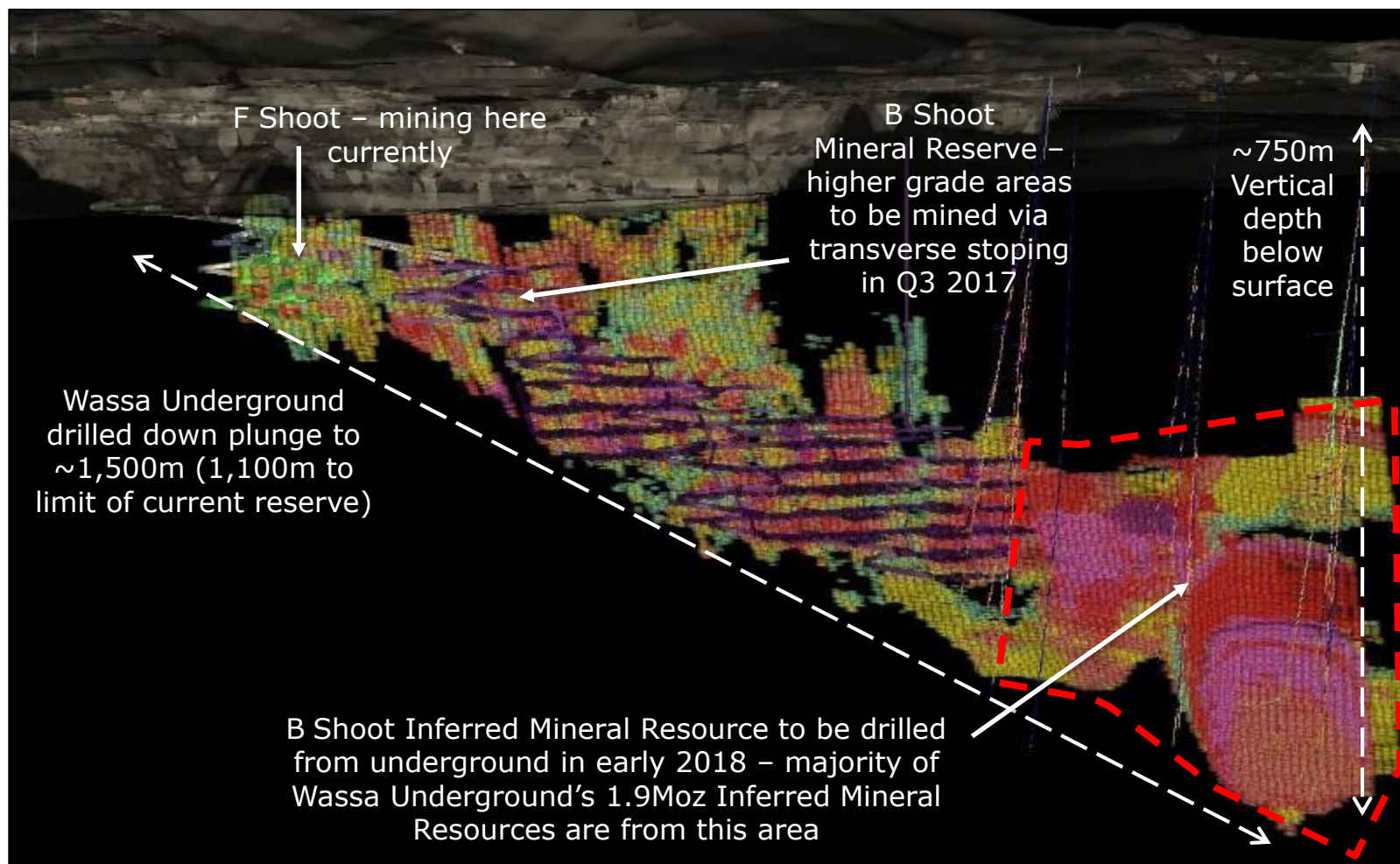
Wassa Gold Mine: Open Pit and Underground Operations

- Open pit and underground gold mine in Ghana, commenced production in 2005
- Mineral Reserves of 1.5Moz (20.4Mt at 2.27g/t)
- 7 years of mine life remaining based on current Mineral Reserves
- Ore sourced from single orebody via Wassa Main Pit and underground mine
- 2.7Mtpa processing plant within 500m of pit
- Ore from Wassa Underground is being blended with open pit ore
- Tonnes processed (7,000tpd) will be constant but grade will increase as underground continues to ramp up
- Life of Mine average annual production expected to be approx. 175,000 ounces



Wassa ¹	Unit	Rate
2016 Production	'000oz	104,381
2016 Cash Operating Cost ²	\$/oz	941
2017 Forecast Production	'000oz	145-160
2017 Forecast Cash Operating Cost ²	\$/oz	830-915

Wassa Underground Development



Strong potential to increase Mineral Resources & Reserves through exploration

Prestea Gold Mine: Refractory Ore Phased Out

- +100 year history of mining at Prestea in Ghana – acquired by GSR in 1999
- Currently mining non-refractory, oxide ore in the Prestea Open Pits
- No longer processing high cost, refractory ore – refractory Mineral Reserves replaced through drilling
- Mineral Reserves of 656Koz (3.3Mt at 6.26g/t), including very high grade Prestea Underground reserves (1.0Mt at 14.02g/t for 469Koz)
- Rehabilitation of very high grade underground mine underway – commercial production expected in mid-2017
- Open pits are bridging the production gap until underground production established



Prestea ¹	Unit	Rate
2016 Production	'000oz	89,673
2016 Cash Operating Cost ¹	\$/oz	800
2017 Forecast Production ²	'000oz	110-120
2017 Forecast Cash Operating Cost ¹	\$/oz	715-780

Mampon: Strong Near-Term Cash Flow

- Mampon is an oxide deposit 65km to the north of the CIL processing plant at the Bogoso site
- Mineral Reserves of 45,000oz of gold (304Kt at 4.60g/t)
- All permits received – mining lease, environmental permit and forestry permit
- High grade ore from Mampon will be blended with ore from Prestea Open Pits to enhance GSR's cash flow in 2017
- Mining expected to commence in Q2 2017
- Limited capital expenditures required to bring Mampon into production due to existing good quality road between deposit and processing plant



All permits received and mining expected to commence in Q2 2017

Prestea Underground: Project Update

- ✓ Rehabilitation works commenced
 - ✓ Long lead time equipment ordered
 - ✓ Underground mining contractor appointed (Manroc Developments, Inc.)
 - ✓ Installation of new electrical and water supply services completed
 - ✓ Track improved on 24 Level for high-speed haulage
 - ✓ Mobilization of underground mining contractor to site and first Alimaks arrived
 - ✓ Rock winder upgrade completed and commissioned
 - ✓ Pre-development of the Mineral Resource and West Reef intersected by mining team
- First stope blasted - expected in Q2 2017
- Achieving commercial production – expected in mid-2017

March 2016 Update to Feasibility Study

Gold production
per annum

90,000oz

Cash operating
cost per ounce¹

\$468

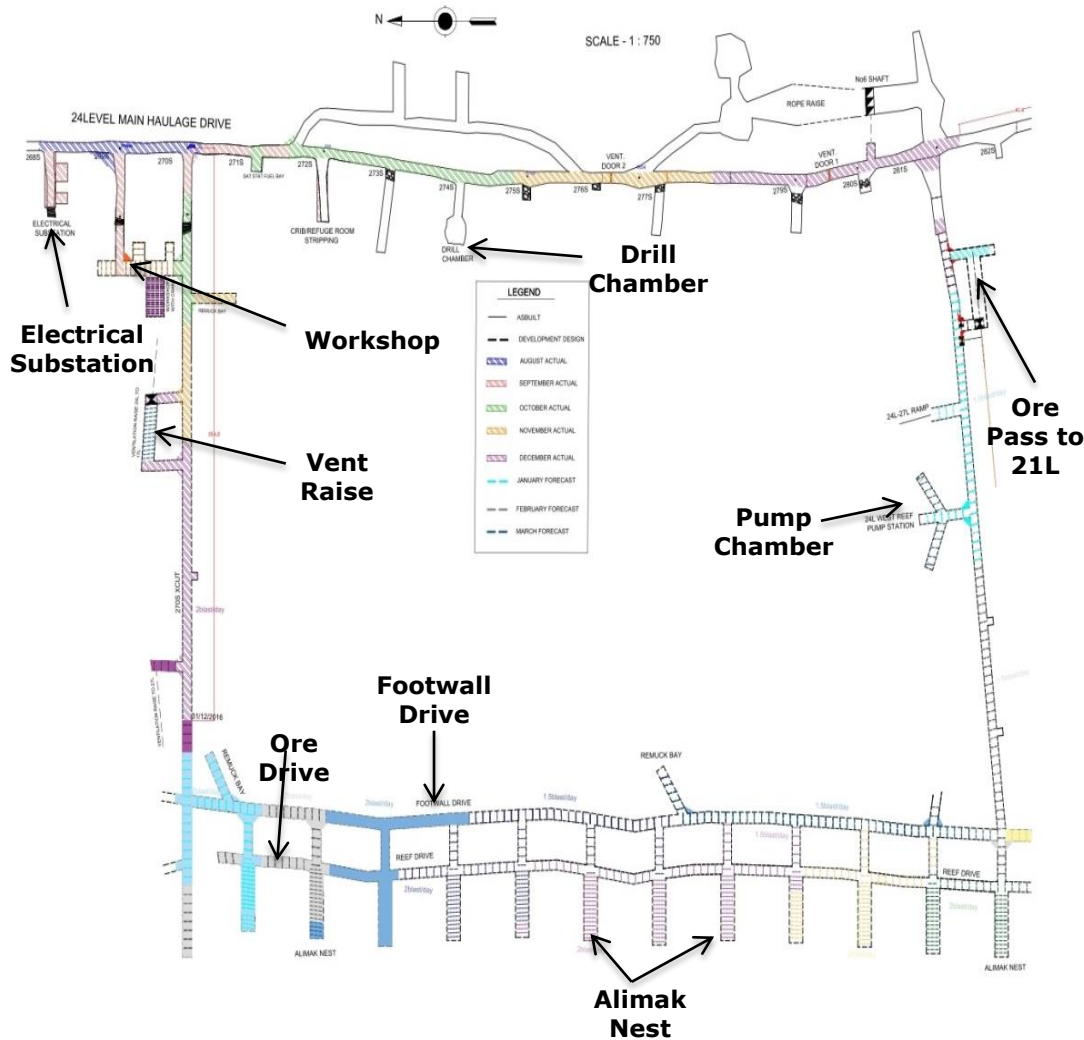
AISC per ounce¹

\$615

Mineral Reserve
head grade

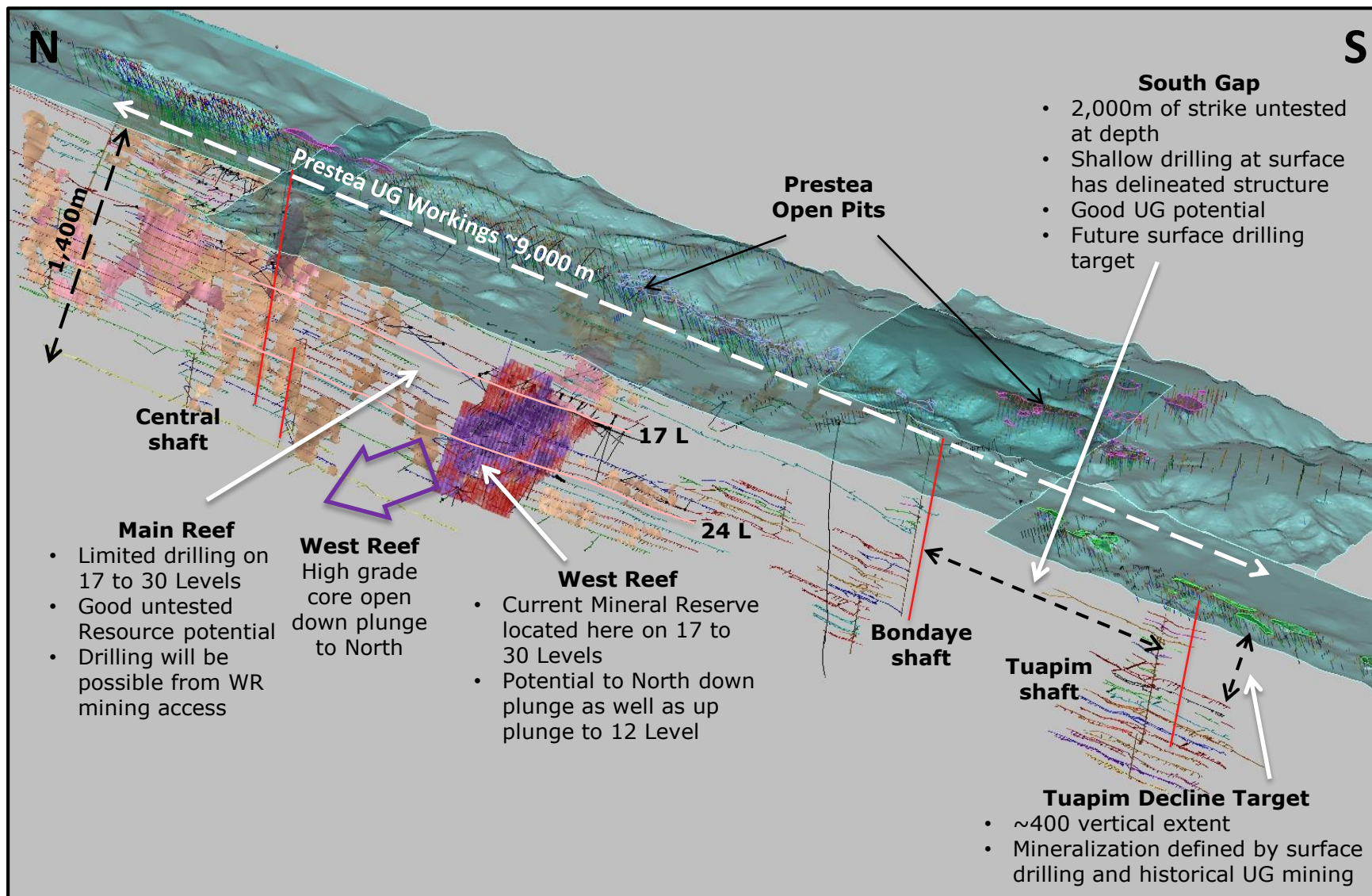
14.0g/t

Prestea Underground: Development of 24 Level



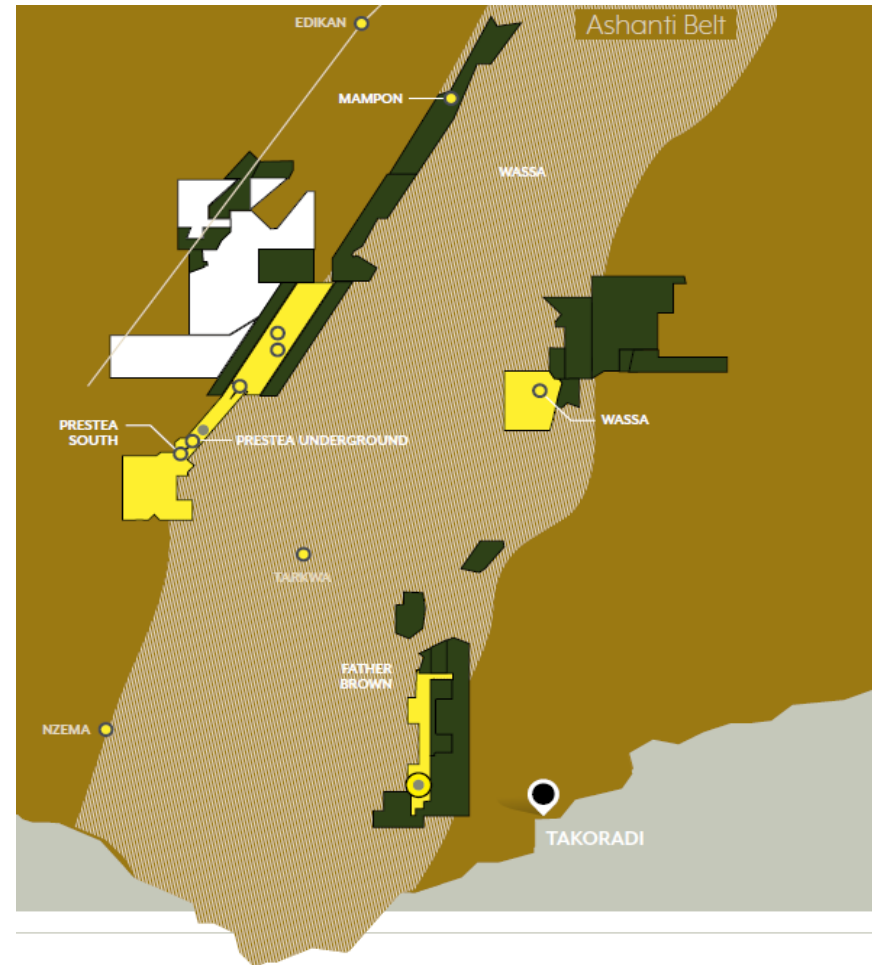
- 24 Level is approximately 900 metres below surface
- Total development advance of 350 metres completed by December 31, 2016
- Focused on crosscut advancement towards West Reef ore body
- Development team also constructed a workshop and electrical bays and slashed existing drives to a size suitable for mechanized load-haul-dump equipment
- First Alimak moved underground and nest is being prepared

Prestea Underground: Exploration Upside Potential



Opportunity to Substantially Increase Mineral Reserves

- Objective is to convert further Measured and Indicated (M&I) Mineral Resources to Mineral Reserves
 - At Wassa, 42% of M&I Resources are Mineral Reserves
 - At Prestea, 57% of M&I Resources are Mineral Reserves
- Strong, low risk, low cost opportunity to expand Mineral Reserve base materially and increase lives of operations
- Significant additional potential outside of existing Mineral Resource area – Golden Star has concession areas totaling 1,156km²
- Update on exploration strategy will be released later in Q1 2017



Legend

- Mining license area
- Exploration license area
- Care and maintenance – no longer mined

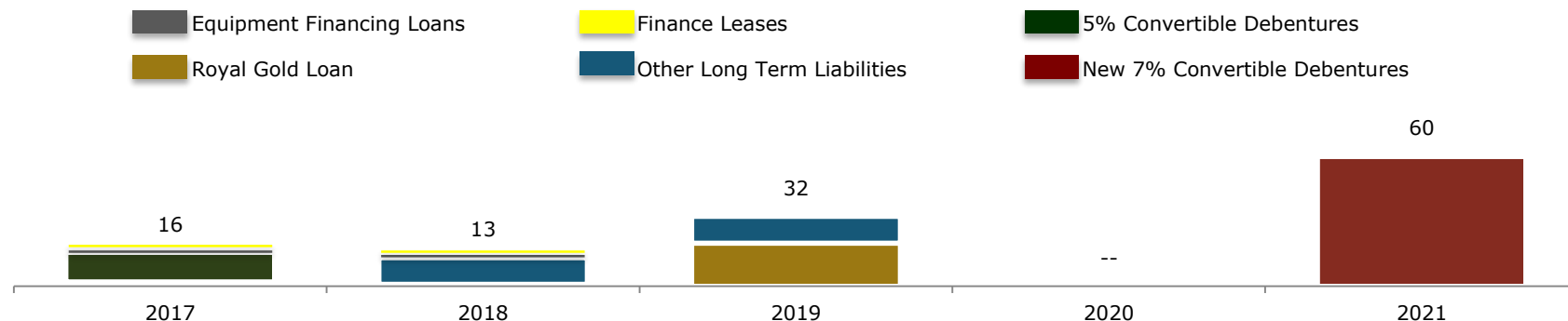
BALANCE SHEET AND KEY MILESTONES



Balance Sheet Transformed in 2016

- \$15m bought deal in April 2016
 - Reduced Accounts Payable
- \$65m private placement in August 2016 of 7.0% convertible senior notes, due 2021
 - Significantly reduced 2017 debt repayments and aligned future debt repayments more closely to forecast cash flow
- \$34.5m underwritten public offering in August 2016
 - Repaid high interest Ecobank II loan and brought new institutional investors onto GSR's register
- Post period end: C\$34.5m (US\$26.2m) bought deal in February 2017
 - Ensures that GSR is fully funded and maintains a strong financial position as it finishes refurbishing Prestea Underground and repays its 2017 debt obligations

Debt Maturity Schedule (\$m)¹



UPCOMING MILESTONES IN 2017

✓ Achieve commercial production at Wassa Underground – January 1, 2017

Mineral Reserve and Mineral Resource update and exploration strategy update – Q1 2017

Commence mining of higher grade B Shoot zone of Wassa Underground – Q1 2017

Commence mining of Mampon deposit – Q2 2017

Blasting of first stope at Prestea Underground – Q2 2017

GOLDEN STAR



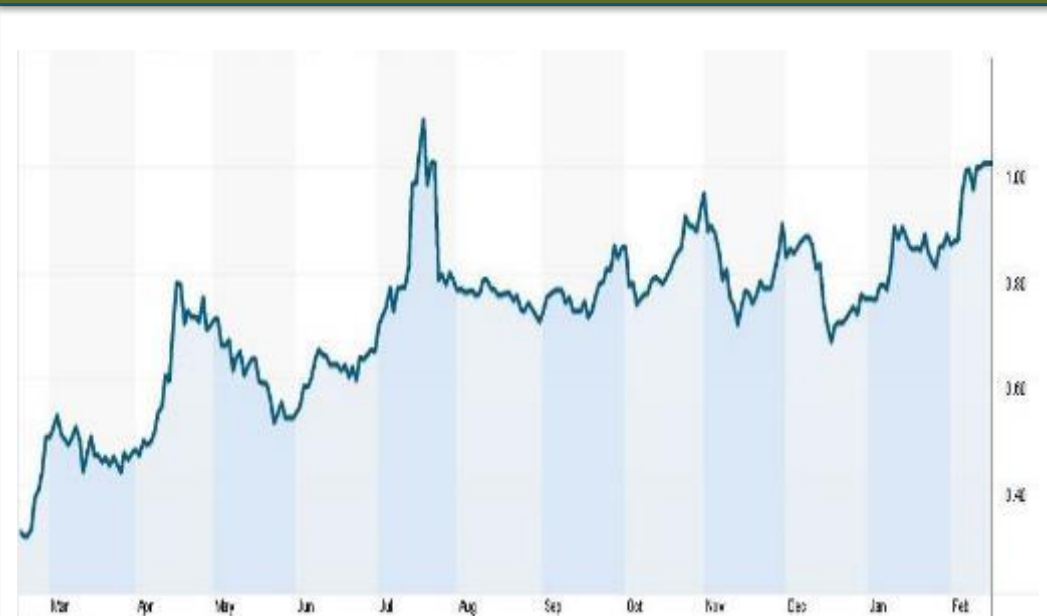
Contact Us

Katharine Sutton, Investor Relations
+1 416 538 3800
investor@gsr.com

NYSE MKT: GSS
TSX: GSC

Appendices: Market Information

One Year Share Price Graph (GSS)^{1,2}



Analyst Coverage

- BMO Capital Markets
- CIBC Capital Markets
- Clarus Securities
- Credit Suisse
- National Bank Financial
- Scotia Bank

Key Institutional Shareholders

- Sentry Investments
- Franklin Templeton
- Oppenheimer Funds
- Earth Resources
- Gold 2000
- AGF Management
- RBC Investment Mgmt

Market Information¹

Markets	NYSE MKT / TSX / GSE
Tickers	NYSE: GSS TSX: GSC GSE: GSR
Shares in Issue	374,499,286
Options	15,572,606
Share Price ²	\$1.00
Market Capitalization	\$375m
Cash ^{3,4}	\$21.8m
Debt	\$121m
Daily Volumes Traded (3 Month Average) ²	2.9m shares
One Year Return ²	225%

A Responsible Corporate Citizen

CONTRIBUTING TO SOCIETY

\$1.4 M

in royalties paid in 2015
and over \$11 million in royalties
over the last 5 years¹

\$5.3 M

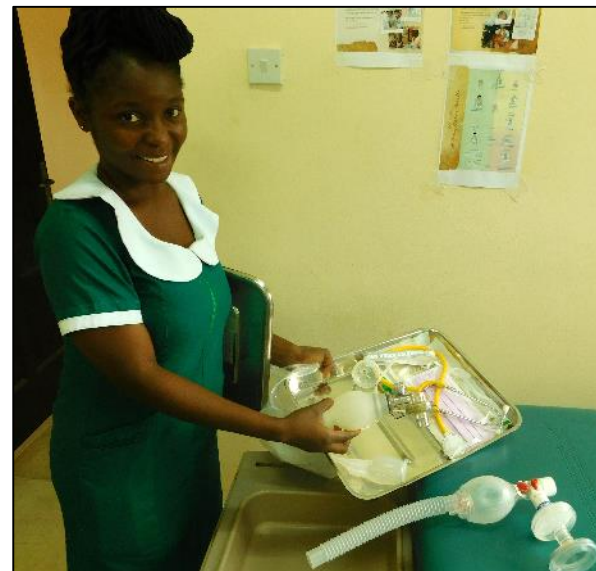
in sustainable
agribusiness to date

\$3.2 M

in development fund
projects to date

\$46 M

in total salaries paid



GSR supports a range of community projects focused on the key areas of healthcare, education and sustainable agribusiness.

For more information on our commitment to corporate social responsibility, please visit www.gsr.com/responsibility

99% of our workforce and contractors are Ghanaian
59% of our workforce and contractors are from local communities

Q4 and FY 2016: Financial Highlights

		2016	2015
Revenue	\$'000	221,290	255,187
Gold Sales	oz	193,860	221,653
Average Realized Gold Price	\$/oz	1,211	1,151
Net Loss	\$'000	39,647	67,681
Net Loss per share	\$/share	0.13	0.26
Adjusted Net Income/ (Loss) ¹	\$'000	11,183	(28,355)
Adjusted Net Income/ (Loss) ¹	\$/share	0.04	(0.11)
Cash Flow from Operations ²	\$'000	53,249	60,148
Cash Flow from Operations ²	\$/share	0.18	0.23
Capital Expenditures	\$'000	84,356	57,051
Cash & Cash Equivs.	\$'000	21,764	35,108

- Revenue in 2016 of \$221.3m – 13% decrease compared to 2015 due to fewer ounces sold from Wassa and Prestea but partially offset by higher gold price
- Mine operating margin¹ of \$27.5 million in 2016, compared to a mine operating loss¹ of \$27.6 million in 2015 due to the closure of the high cost, refractory operations in Q3 2015
- Adjusted net earnings¹ of \$11.2m in 2016 compared to an adjusted net loss¹ of \$28.4m in 2015
- \$21.8m cash at year-end, exclusive of \$10m received from RGLD on January 3, 2017

Royal Gold Financing Agreement

- **GSR has a financing arrangement with Royal Gold for total aggregate proceeds of \$145m.** Use of funds:
 - Facilitate development of Wassa and Prestea underground mines
 - Retire outstanding Ecobank I loan debt
- **Gold stream of \$145m over Bogoso, Prestea and Wassa:**
 - From January 1, 2016, to deliver 9.25% of all production at a cash purchase price of 20% of spot gold
 - From January 1, 2018 or commercial production of the underground mines, whichever is sooner, to deliver 10.50% of production at a cash purchase price of 20% of spot gold until 240,000 ounces have been delivered
 - Thereafter, 5.50% of production at a cash purchase price of 30% of spot gold will be delivered ('tail stream')
 - Option to repurchase 50% of the tail stream
 - In the event that Golden Star expands its operations to outside its current mine license areas in the future, it will have the option to deliver ounces from these operations to satisfy the first and second delivery thresholds
 - GSR would retain the upside to these new operations as the tail stream would not be applied
 - All payments received for a total of \$145m
 - A total of 30,365 ounces have been delivered as at December 31, 2016
- **Four year \$20m secured term loan:**
 - Interest rate linked to gold price¹
 - At a gold price of \$1,200/oz the interest rate would be 7.5% and at \$1,300/oz, it would be 8.13%
 - Rate is not to exceed 11.5%
 - No early prepayment penalty
 - Subject to an agreed quarterly 25-50% excess cash flow sweep from the third quarter of 2017 onwards
 - Matures in July 2019
 - Royal Gold has security against mining assets

Mineral Reserves and Resources

Mineral Reserves ^{1,2,3}	Tonnes ('000)	Grade (Au g/t)	Content (Koz)
Proven Reserves			
Wassa	1,046	1.09	37
Prestea	25	2.69	2
Total	1,071	1.12	39
Probable Reserves			
Wassa	19,319	2.33	1,450
Prestea	3,237	6.29	654
Total	22,556	2.90	2,104
Total Proven & Probable	23,626	2.82	2,143

Mineral Resources ^{1,2,3}	Tonnes ('000)	Grade (Au g/t)	Content (Koz)
Measured & Indicated Mineral Resources			
Wassa	54,647	2.02	3,556
Prestea	6,712	5.30	1,144
Total	61,360	2.38	4,700
Inferred Mineral Resources			
Wassa	16,462	4.15	2,200
Prestea	3,813	7.70	944
Total	20,305	4.82	3,144

1. For Wassa's Mineral Reserves and Resources please refer to 'NI 43-101 Technical Report on a Feasibility Study of the Wassa Open Pit and Underground Project in Ghana', dated December 31, 2014, which is filed on SEDAR and at www.gsr.com
2. For Prestea's Mineral Reserves and Resources please refer to 'NI 43-101 Technical Report on a Feasibility Study of the Prestea Underground Gold Project in Ghana', dated November 03, 2015, which is filed on SEDAR and at www.gsr.com
3. All numbers exclude refractory ore.