



Expanding Production and Reducing Costs

**INVESTOR
PRESENTATION**
DECEMBER 2016

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, including the estimated amounts thereof; the exploration upside of the Company's projects and ability of the Company to increase mine lives; the timing for commercial production at Wassa Underground and Prestea Underground; the achievement of 2016 production, cash operating cost and capital expenditure guidance; the benefits of underground mining techniques including the impact on grades, costs, power usage, seasonality and permitting; life of mine average annual production at Wassa Underground; the current rate of decline development at Wassa Underground and the time for accessing the B-Shoot; the ability to extend the life of mine at Prestea Underground through exploration; the conversion of mineral resources into mineral reserves; the potential for growth of Golden Star's share price; the improvement of grades at Wassa due to Wassa Underground production; production and cash operating costs for 2016; future work to be completed at Prestea Underground Mine, including the timing for mechanical and electrical rehabilitation work, as well as pre-development and development work and stoping; and capital expenditures for the development of Wassa Underground and Prestea Underground mine. 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, 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; 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" 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 Loss" and "Adjusted Net Loss/Share" to supplement the condensed interim consolidated financial statements. "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 for the three and six months ended June 30, 2016" and our "Management's Discussion and Analysis of Financial Condition and Results of Operations for the year ended December 31, 2015" 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
- Two high grade development assets, including 14.02g/t Prestea Underground - 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

A Transformational Story: Key Milestones

Underground Developments Funded and Balance Sheet Strengthened

- \$150m financing agreement and \$20m loan secured with Royal Gold¹
- \$50m Ecobank I loan repaid
- \$12m of Accounts Payable repaid to creditor – remaining \$24.5m deferred to 2018
- Convertible debentures refinanced so repayment is more closely aligned with cash flow
- \$25m Ecobank II loan repaid
- \$34.5m equity offering completed

Transitioned into a Non-Refractory Producer

- Invested in exploration to replace 2Moz of refractory reserves with non-refractory reserves
- Cessation of refractory production at Bogoso
- First stope blasted at Wassa Underground

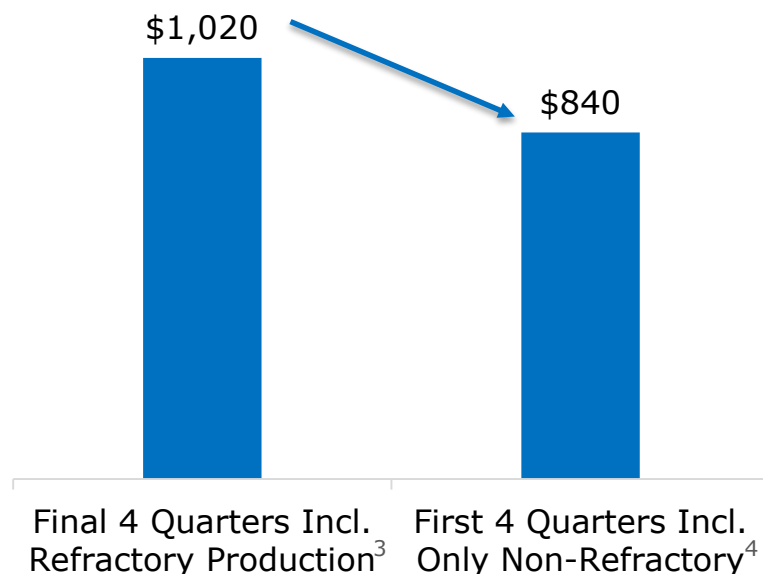
Upcoming Milestones: Becoming a High Grade, Low Cost Producer

- Commercial production at Wassa Underground expected to commence in early 2017
- First stope expected to be blasted at Prestea Underground in Q2 2017, with commercial production in mid-2017
- Deliver significantly larger production profile and lower operating cost profile going forwards

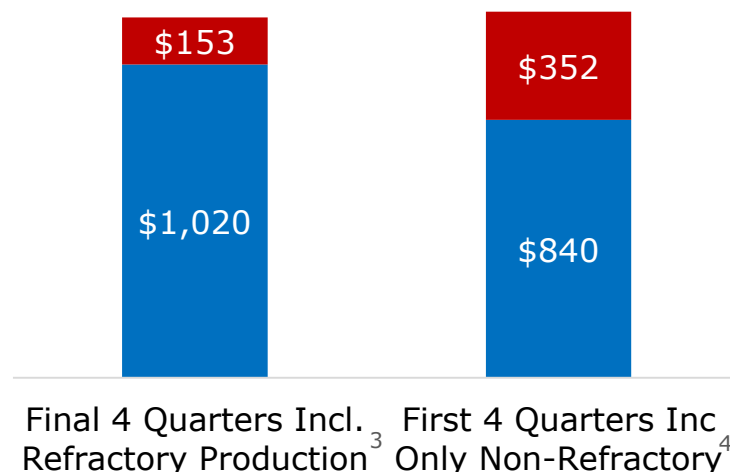
Lower Costs and Stronger Cash Margin

Ceasing refractory production has yielded lower cash operating costs¹ and a stronger cash operating margin per ounce¹

Cash Operating Cost Per Ounce¹

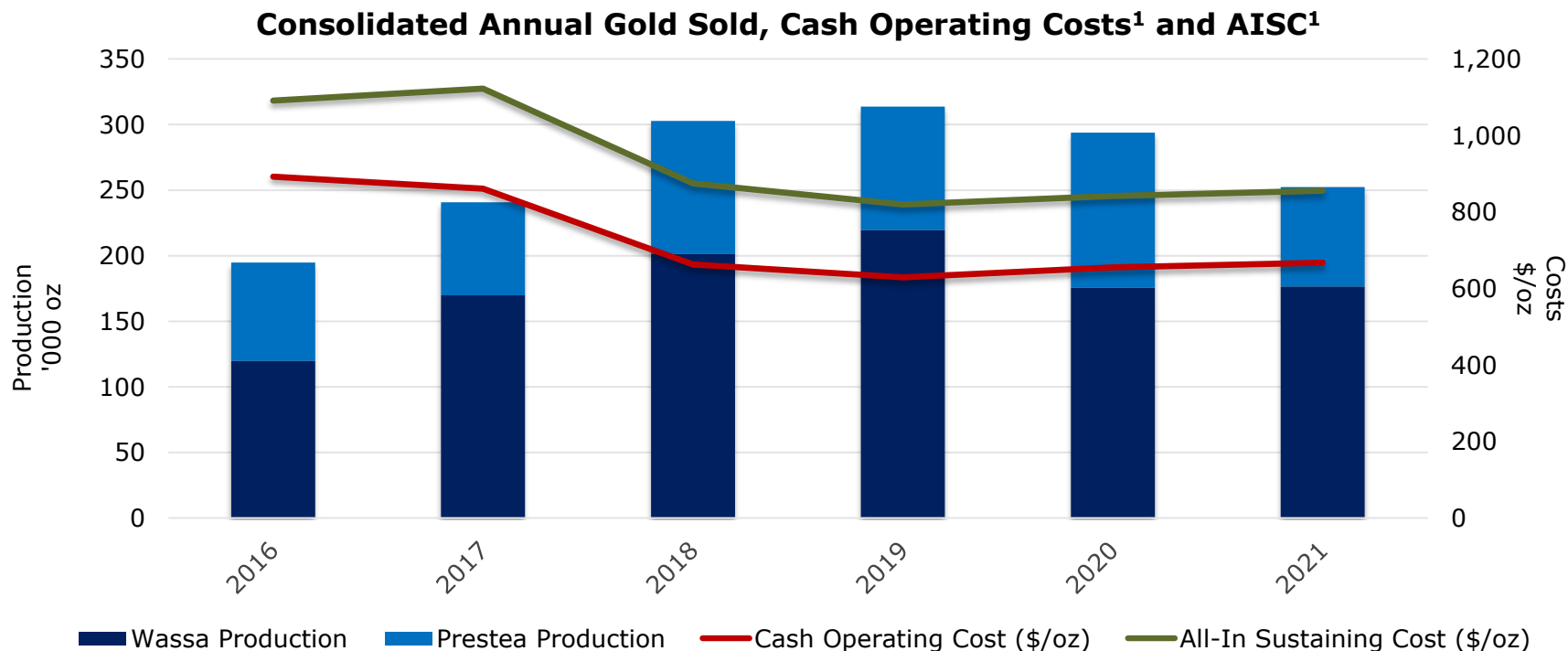


Cash Operating Margin Per Ounce^{1,2}



- Cash operating cost per ounce¹ has decreased by 21% since GSR ceased refractory production
- Average cash operating margin per ounce¹ has increased by 130%

Expanding Production and Reducing Costs



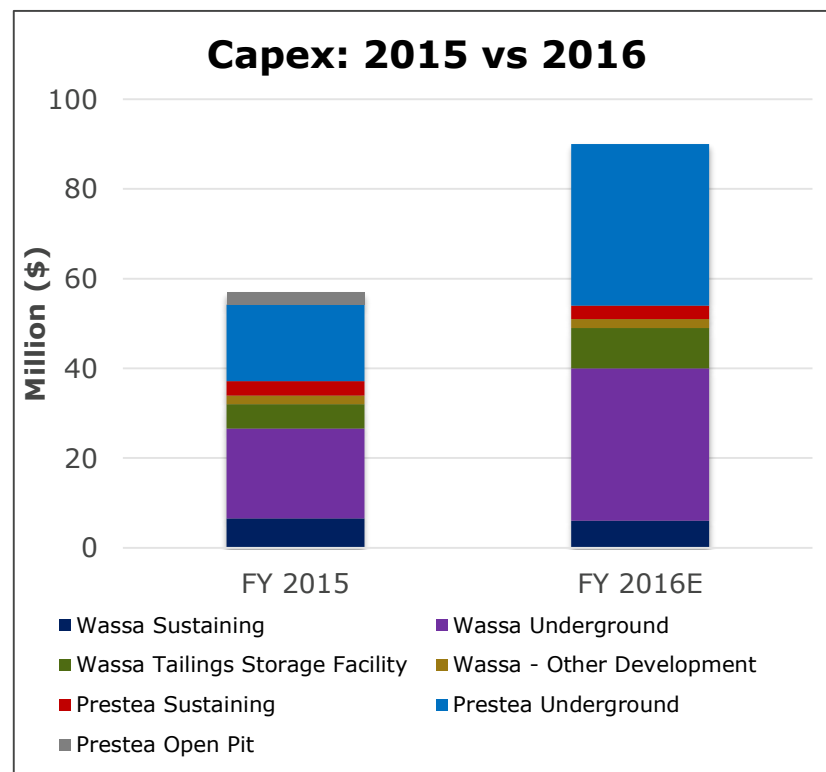
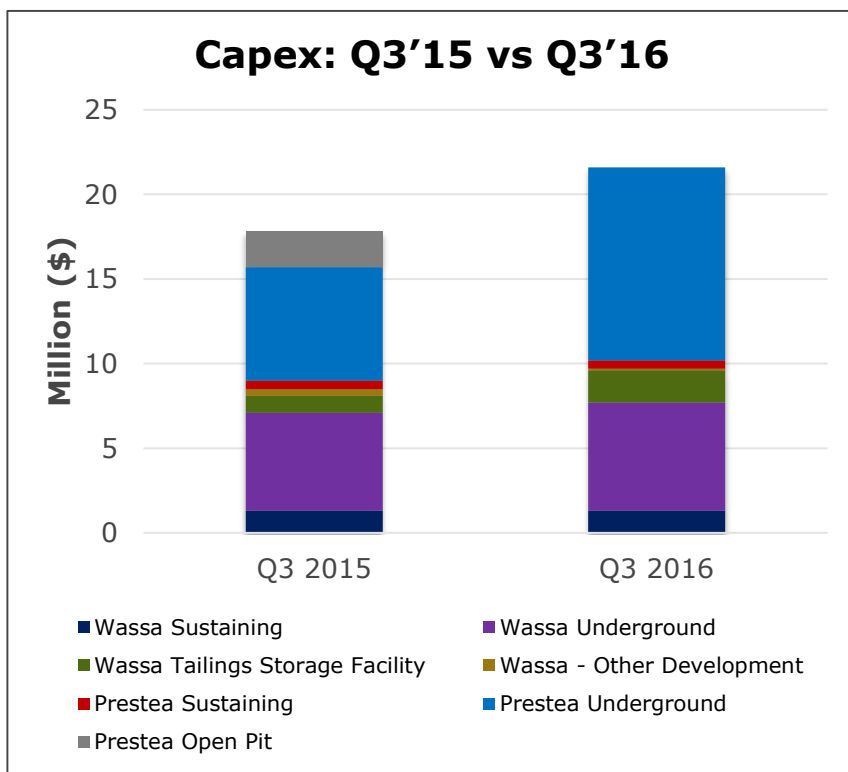
- 2016 guidance: 180-205,000oz at cash operating costs of \$815-925/oz
- Average for the next 5 years from 2017 onwards:

- Production: 281,000oz/annum
- Cash operating costs¹: \$695/oz
- AISC¹: \$903/oz

**60% increase in production
forecast between 2016 and
2019**

Investing In Our Future

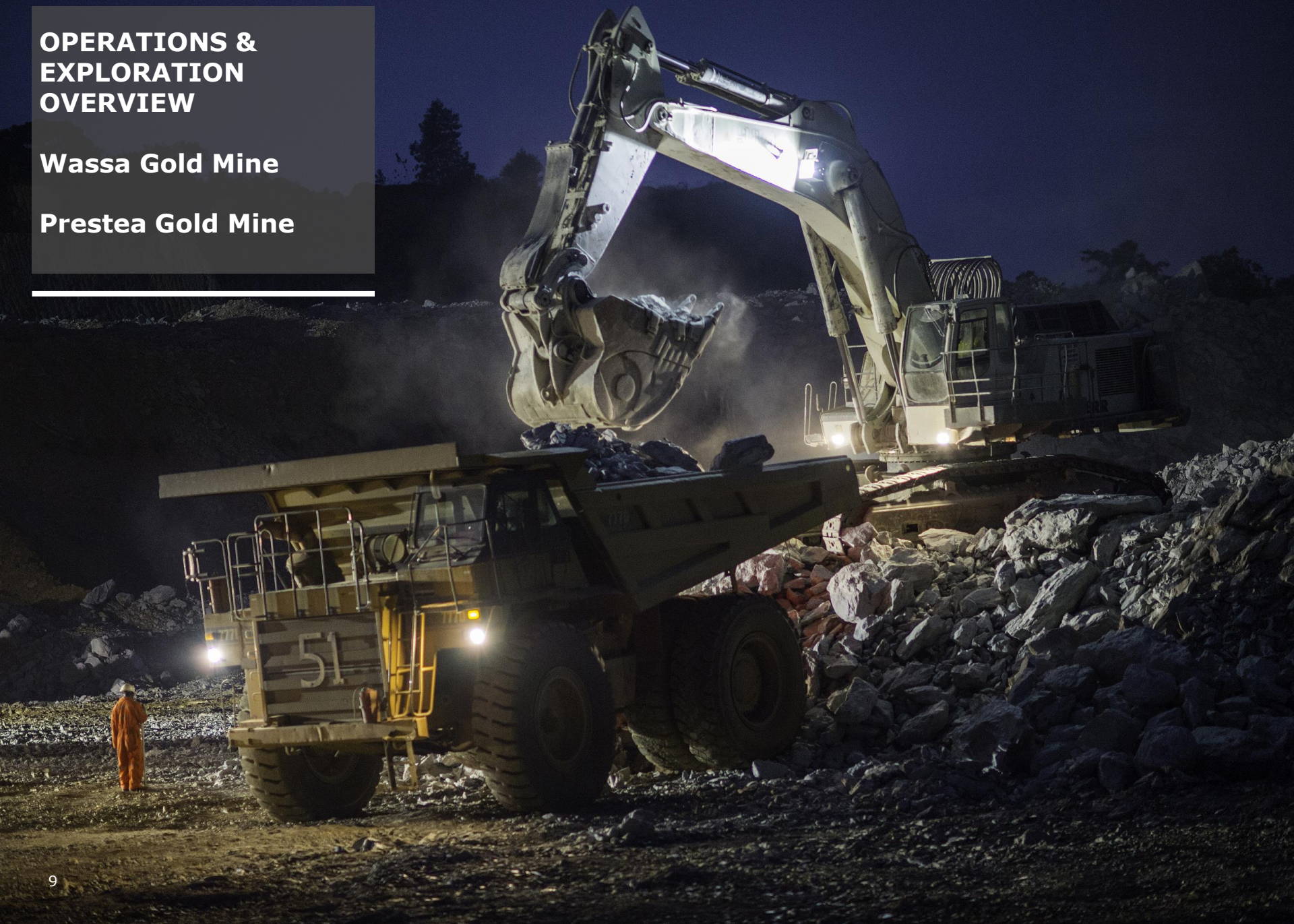
- Capital expenditures of \$21.7m during Q3 2016 reflecting continued work at development projects – two underground mines will transform GSR's production and cost profiles
- Total spent year-to-date of \$60.6m
- First stope blasted at Wassa Underground during Q3 2016, as expected



**OPERATIONS &
EXPLORATION
OVERVIEW**

Wassa Gold Mine

Prestea Gold Mine



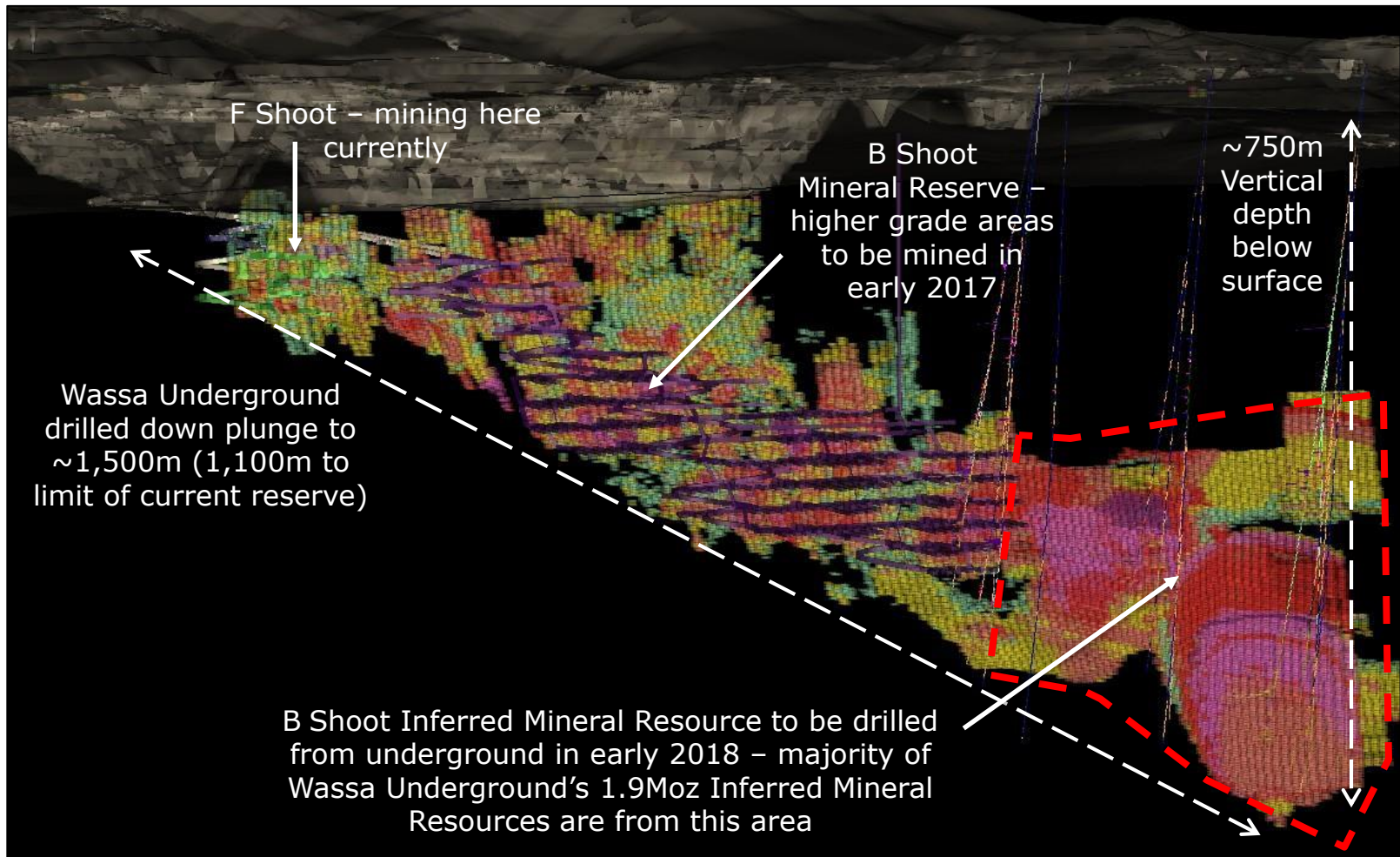
Wassa Gold Mine: Underground Production Commenced

- Open pit and underground gold mine in Ghana, commenced production in 2005
- Mineral Reserves of 1.5Moz (20.4Mt at 2.27g/t)
- 7.5 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



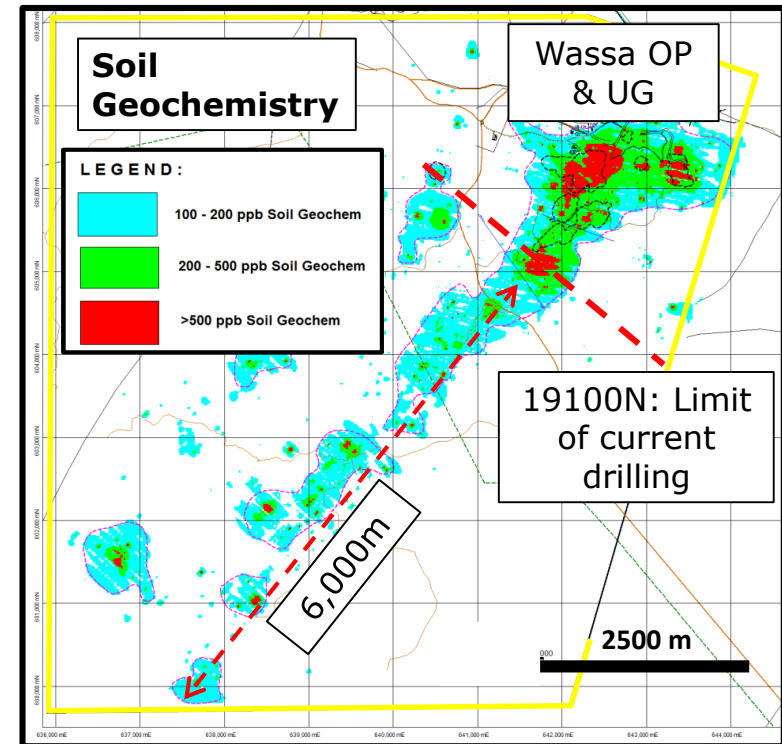
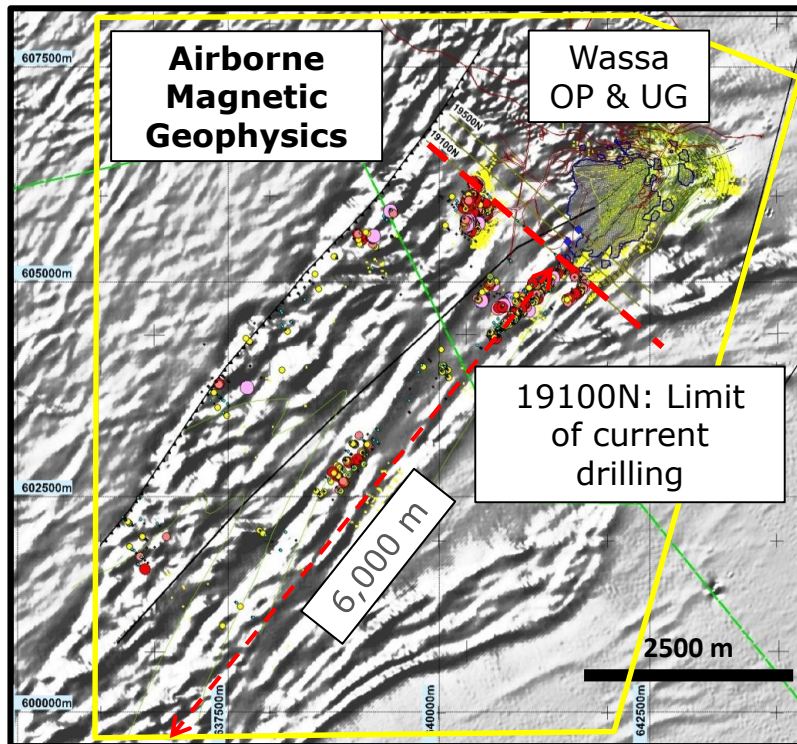
Wassa	Unit	Rate
2015 Production	'000oz	107,751
2015 Cash Op Costs ¹	\$/oz	838
2016 Forecast Production ²	'000oz	110-112
2016 Forecast Cash Op Costs ^{1,3}	\$/oz	900-990

Wassa Underground Development



Strong potential to increase Mineral Resources & Reserves through exploration

Wassa UG: Significant Exploration Upside Potential



- Wassa Underground has huge potential to grow down plunge – mineralized zone remains open
- Historically, two step out fences of drilling have defined in excess of 1Moz of Mineral Resource over 400m of down plunge extension
- GSR's concession area extends for a further 6km in this direction – through drilling, Mineral Resources are expected to expand substantially

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 pit is bridging the production gap until underground production established



Prestea	Unit	Rate
2015 Production	'000oz	113,902
2015 Cash Op Costs ¹	\$/oz	1,108
2016 Forecast Production	'000oz	80-93
2016 Forecast Cash Op Costs ¹	\$/oz	800-890

Mampon Mining Lease Received

- Post-period end, mining lease received for high grade Mampon gold deposit
- 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)
- 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 H1 2017 – represents upside on GSR's current production profile
- Limited capital expenditures required to bring Mampon into production due to existing good quality road between deposit and processing plant



Opportunity to enhance 2017 cash flow strongly

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 – expected in Q4 2016

Pre-development of the Mineral Resource – expected to begin Q4 2016

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

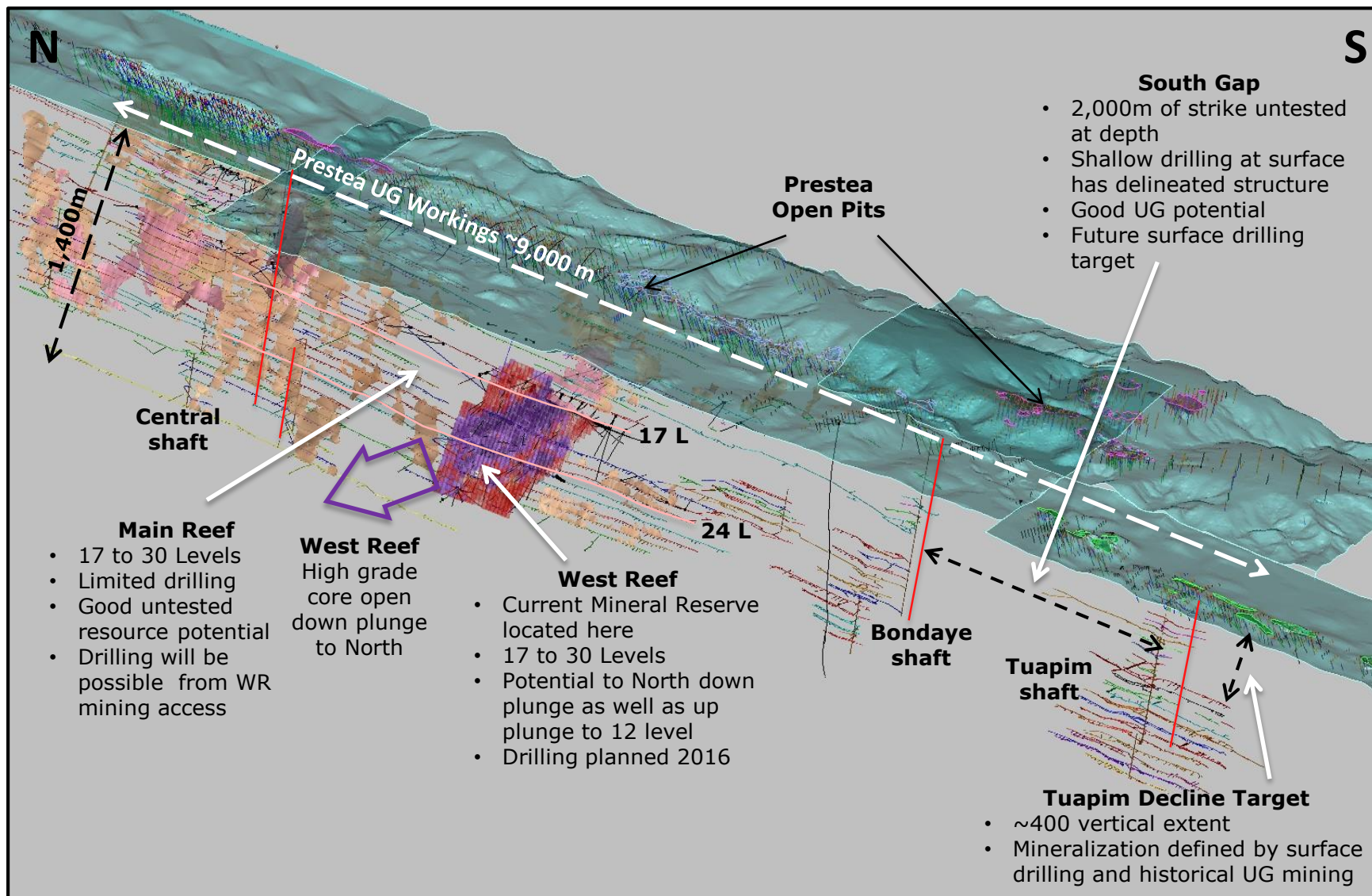
AISC per ounce¹

\$615

Mineral Reserve
head grade

14.0g/t

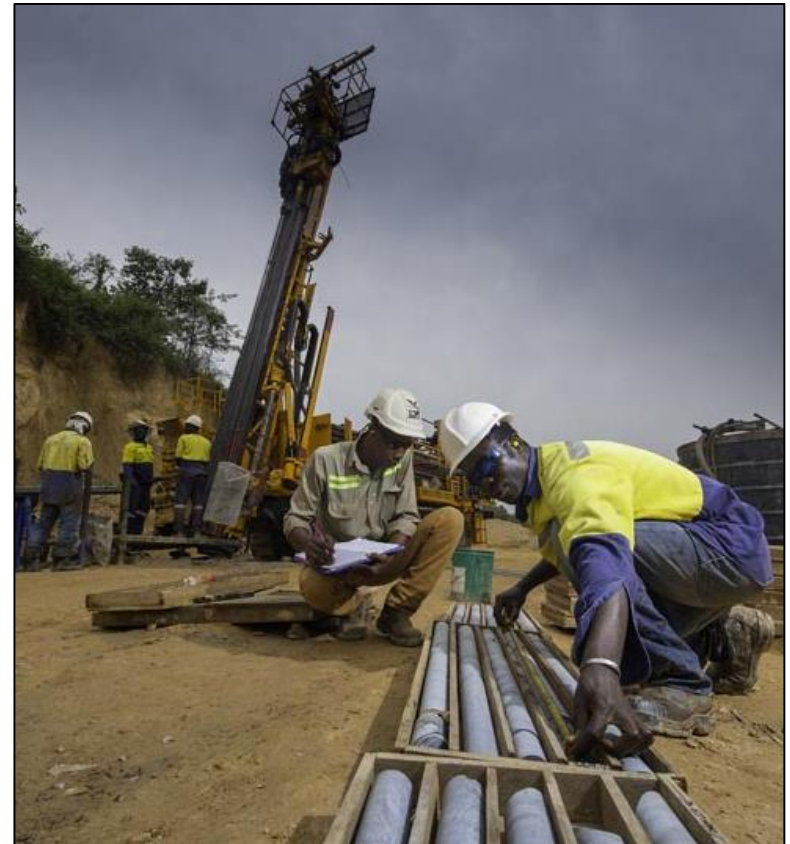
Prestea Underground: Exploration Upside Potential



Opportunity to Substantially Increase Mineral Reserves

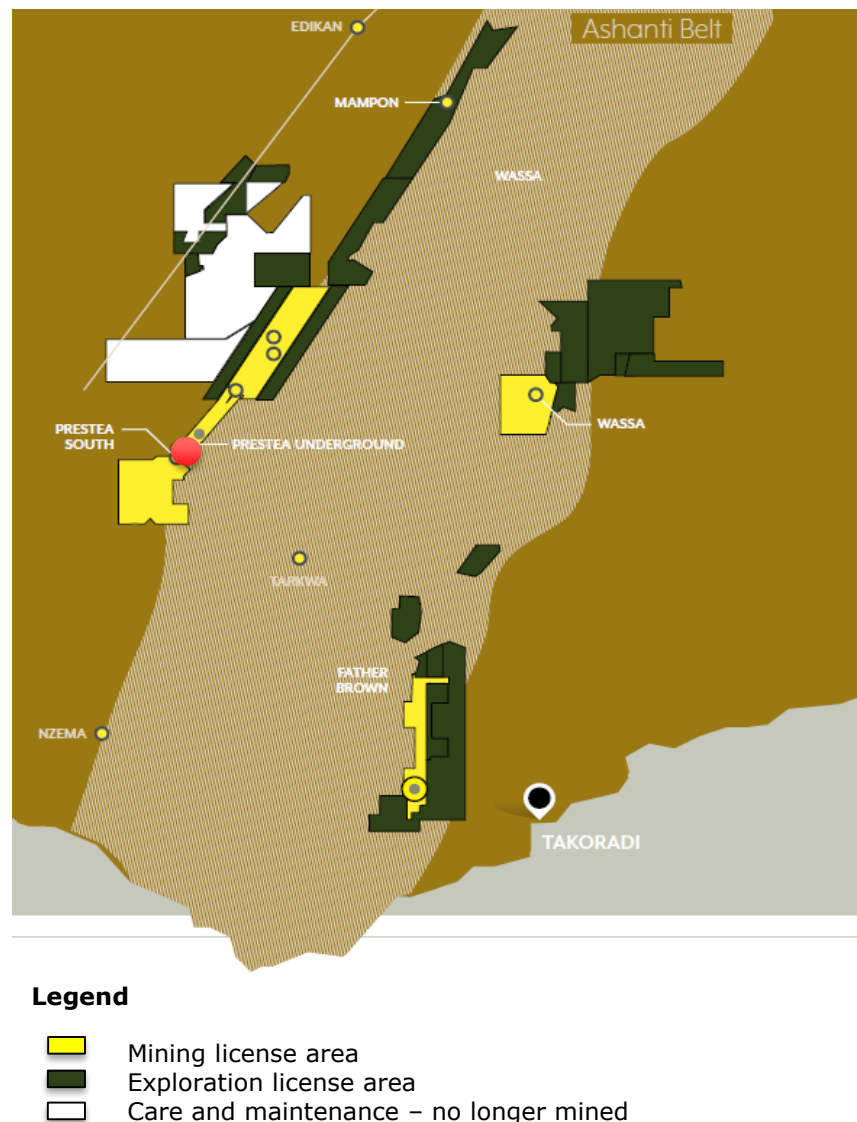
Potential to expand Mineral Reserves and extend lives of both operations significantly through further drilling

- Objective is to convert further 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
- Historical M&I Resource to Reserve conversion rate for GSR of approx. 70%
- Significant additional potential outside of existing Mineral Resource area
- Exploration team focused on drilling Wassa Underground and Prestea Open Pits (Prestea South pit) currently



Significant Regional Exploration Potential

- GSR's existing concession areas cover approximately 85km of 250km Ashanti Gold Belt
- Total concession area of 1,156km² – largest mineral concession on Ashanti belt
- GSR has produced >4Moz of gold over 17 years of production history
- Highly prospective region with strong exploration upside potential
- Seven other gold mines in close proximity to GSR's concession areas:
 - Tarkwa (Gold Fields)
 - Damang (Gold Fields)
 - Iduapriem (AngloGold Ashanti)
 - Obuasi (AngloGold Ashanti)
 - Chirano (Kinross)
 - Edikan (Perseus)
 - Nzema (Endeavour)



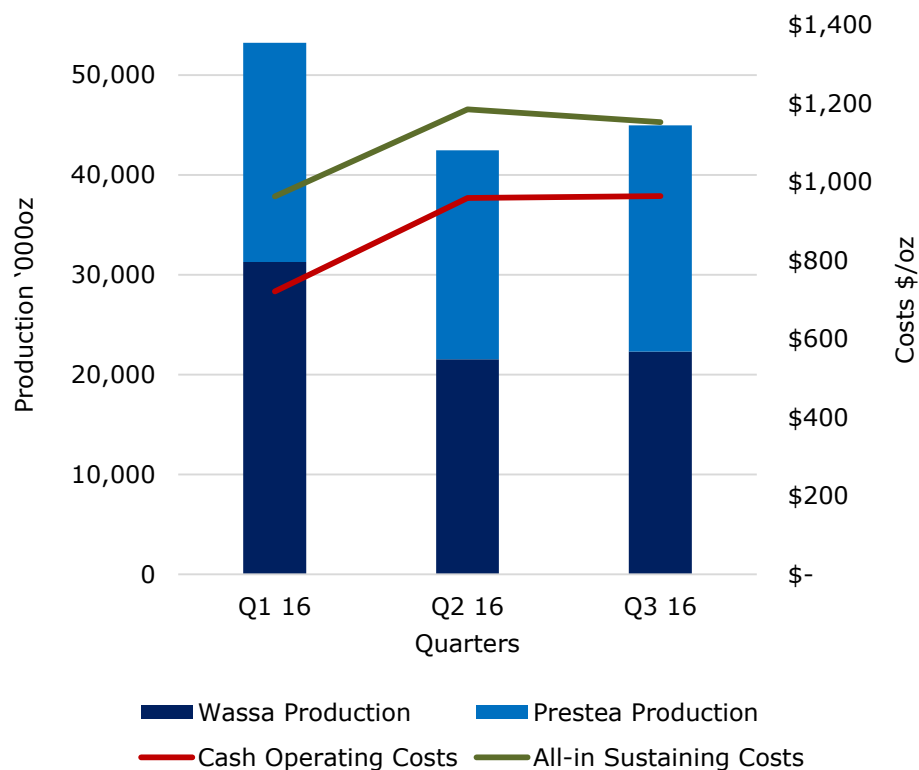
Q3 OVERVIEW AND DEBT MATURITY SCHEDULE



Q3 2016 Operational Highlights

On track to achieve 2016 full year guidance in terms of production, cash operating cost per ounce¹ and capital expenditures

Gold Production, Cash Operating Cost¹ and AISC per ounce

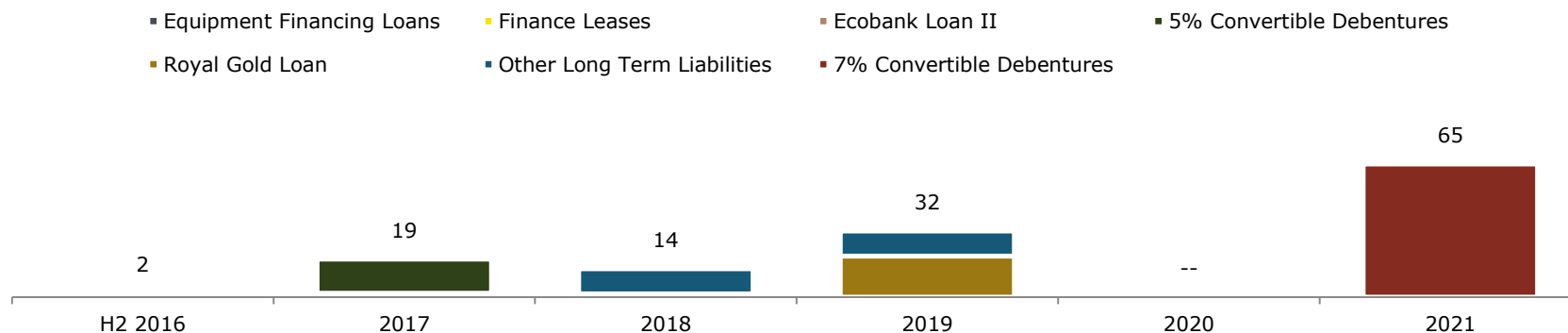


- Q3 2016 gold production in line with expectations
- Production profile impacted by seasonality and horizon being mined in Wassa Main Pit
- This impact will be reduced when both underground mines are in production
- Cash operating cost¹ and AISC¹ per ounce at both projects also expected to decline further as high grade underground projects come on-stream

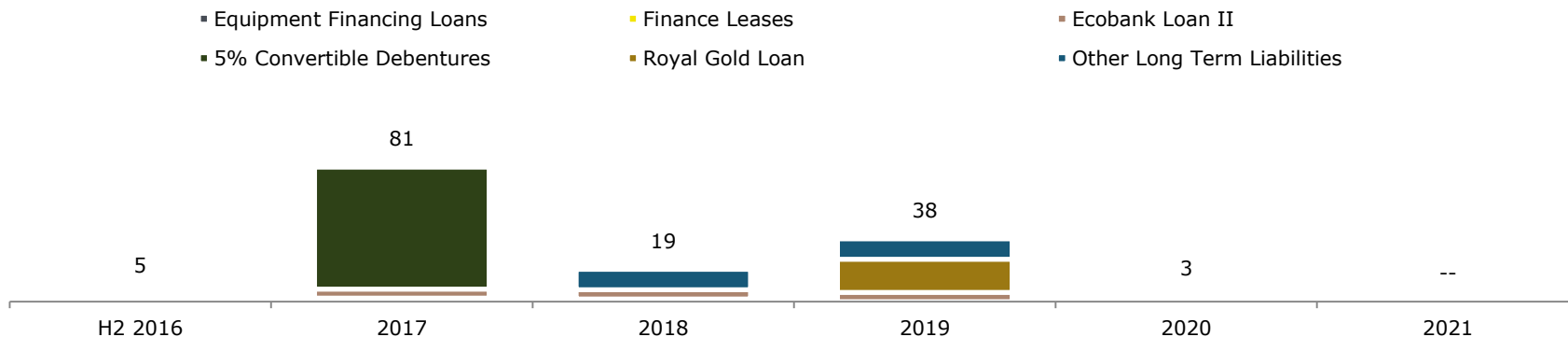
Balance Sheet Strengthened

Debt repayments are now more closely aligned to forecast cash flow

Post-Transaction Debt Maturity Schedule (\$m)¹



Pre-Transaction Debt Maturity Schedule (\$m)



Significantly Reduced Risk Profile

Materially lower risk approach due to two underground mines approaching commercial production



- Two open pit mines with underground developments – both expected to be in commercial production by mid-2017
- Focus on underground mining techniques represents:
 - Higher grade ore and lower cost production
 - Lower power usage due to smaller tonnages processed – less dependency on grid power
 - Lower impact from seasonality
 - Lower impact on local people – reduced permitting risk
- Balance sheet strengthened through debt and equity offerings – further reduces GSR's risk profile

FUTURE GROWTH



UPCOMING MILESTONES IN H2 2016

- ✓ Commence production at Wassa Underground – mid-2016
- ✓ Strengthen balance sheet through refinancing of debt – Q3 2016
- ✓ Receive mining lease for Mampon deposit near Prestea Open Pits – Q4 2016

Mobilize contractor to Prestea Underground – Q4 2016

Commence orebody development of Prestea Underground - Q4 2016



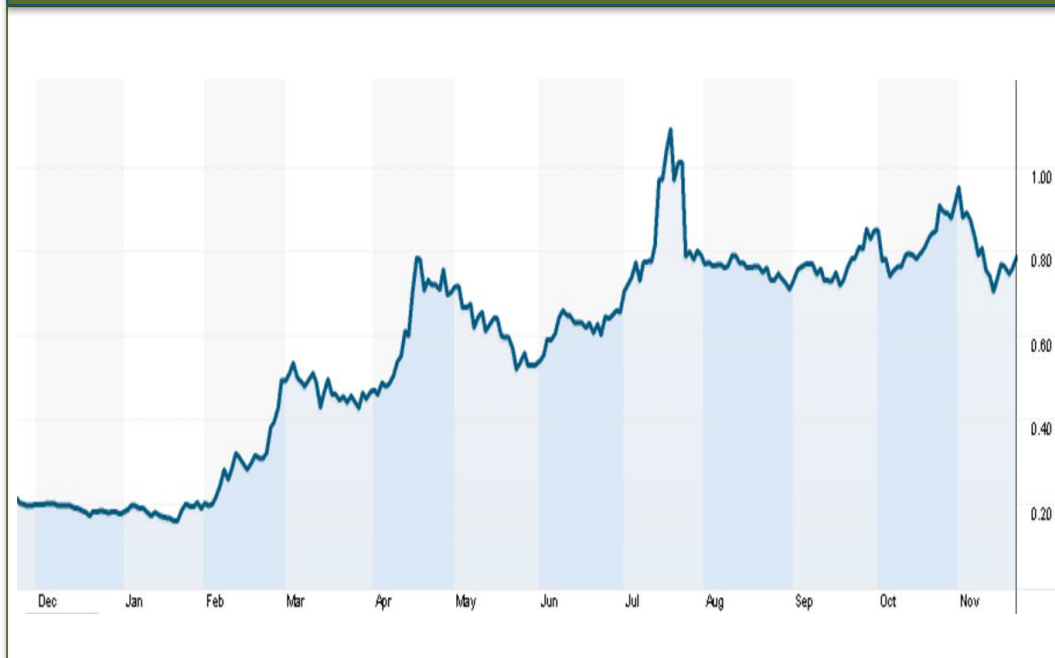
Contact Us

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NYSE MKT: GSS
TSX: GSC

Appendices: Market Information

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



Analyst Coverage

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

Key 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	328,745,758
Options	16,440,582 ³
Fully Diluted	350,820,571
Share Price ²	\$0.77
Market Cap ²	\$264m
Cash (at Sep 30 2016)	\$17.5m ⁴
Debt (at Sep 30 2016)	\$122.0m
Daily Volumes Traded (3 Month Average) ²	2.2m shares
Year to Date Return ²	290%

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

Q3 2016 Financial Highlights

As at 30 September 2016		Q3 2016	Q3 2015
Revenue	\$'000	55,511	56,452
Gold Sales	oz	45,361	51,898
Average Realized Gold Price	\$/oz	1,286	1,088
Net Loss	\$'000	23,110	6,832
Net Loss per share	\$/share	0.07	0.03
Adjusted Net Earnings/(Loss) ¹	\$'000	1,148	(11,205)
Adjusted Net Earnings/(Loss) ¹	\$/share	0.01	(0.04)
Cash Flow from Operations	\$'000	21,500	43,223
Cash Flow from Operations	\$/share	0.06	0.17
Capital Expenditures	\$'000	21,656	17,789
Cash & Cash Equivs.	\$'000	17,494	27,673

- Revenue in Q3 2016 largely in line with Q3 2015 due to higher average realized gold price despite weaker Wassa production
- Mine operating margin of \$5.8m, compared to a mine operating loss of \$4.3m in Q3 2015
- Adjusted net earnings of \$1.1m in Q3 2016 compared to an adjusted net loss of \$11.2m in Q3 2015
- \$17.5M cash at the end of Q3 2016, exclusive of \$20m received from RGLD on October 3, 2016
- Focused on generating meaningful cash flow

Q3 2016: Wassa Operational Results

Wassa		Q3 2016	Q3 2015
Ore Mined	kt	608	728
Waste Mined	kt	2,742	2,658
Ore Processed	kt	699	635
Grade Processed	g/t	1.09	1.51
Recovery	%	93.4	92.9
Gold Production	oz	22,290	28,848
Gold Sales	oz	22,431	28,848
Cash Operating Costs ¹	\$/oz	1,110	770

- Q3 2016 production was in line with expectations but Q2 production was weaker due to higher than expected dilution during mining
- GSR expected to offset weaker Q2 2016 production during Q3 2016 due to expanded processing capacity
- Measures put in place to reduce dilution – higher grade ore processed reported for September 2016
- Production in Q4 2016 is anticipated to be in line with expectations

Wassa 2016 Production Guidance:

89,000-97,000oz from Wassa Main Pit at cash operating costs¹ of \$900-990/oz

Plus 11,000-15,000oz from Wassa Underground

Q3 2016: Prestea Operational Results

Prestea		Q3 2016	Q3 2015
Ore Mined	kt	490	240
Waste Mined	kt	1,212	606
Ore Processed	kt	387	725
Grade Processed	g/t	2.20	1.66 ¹ 1.35 ²
Recovery	%	82.7	60.4 ¹ 68.0 ²
Gold Production	oz	22,684	23,050
Gold Sales	oz	22,930	23,050
Cash Operating Cost ³	\$/oz	835	1,261

- Record quarterly production achieved since non-refractory production from Prestea Open Pits began in Q3 2015
- Year to date production of 65,546oz – 2016 FY guidance increased as a result of strong performance
- Accordingly, FY2016 cash operating cost³ per ounce guidance decreased
- 34% decrease in cash operating cost per ounce³ compared to Q3 2015 as a result of transition to lower cost, non-refractory ounces

Upgraded Prestea 2016 Production Guidance:

80,000-93,000oz from Prestea Open Pits at cash operating cost³ of \$800-890/oz

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
 - \$135m payments received to date, with the remaining \$10m expected in January 2017
 - A total of 26,020 ounces have been delivered as at September 30, 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.