

# Golden Star Announces Mineral Reserves and Resources Estimates as at December 31, 2013

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## Continued growth in Mineral Reserves and Resources at Wassa

TORONTO, ONTARIO--(Marketwired - Feb 10, 2014) -

Editors note: There are 3 photos associated with this release.

[Golden Star Resources Ltd.](#) (TSX:GSC)(NYSE MKT:GSS)(GHANA:GSR) ("Golden Star" or the "Company") is pleased to announce its Proven and Probable Mineral Reserves (collectively "Mineral Reserves") and Mineral Resources as of December 31, 2013.

Highlights of this announcement are as follows:

- Company Mineral Reserve ounces declined by 8% to 3.9 million oz from depletion and a lower gold price assumption of \$1,300 per oz
- Company Measured and Indicated Mineral Resource ounces declined by 14% to 6.4 million oz with lower gold price assumption of \$1,400 per oz
- Wassa Mineral Reserves increased 34% to 2.0 million oz; 10% more tonnes at 22% higher average grade of 1.75 g/t Au
- Wassa Measured and Indicated Mineral Resources increased 29% to 3.3 million oz at 25% higher average grade of 2.0 g/t Au
- Mineral Reserves in active pits at Bogoso decreased to 394,000 oz; hard rock mining scheduled for completion in Q3 2015
- Tailings reclaim at Bogoso continues to fill the oxide plant to capacity. Currently unclassified, this material is expected to be upgraded to Mineral Resource and Reserve during 2014

Sam Coetzer, President and CEO of Golden Star, commented:

*"This updated Mineral Resource and Reserve estimate supports the Company's strategy to move towards being a lower cost non-refractory gold producer. Following the positive outcome of the feasibility study on Prestea Underground mine, 430,000 ounces of high grade Mineral Reserves have been included in our estimates. Strong Mineral Resource and Reserve growth at Wassa highlights the importance of this asset to the Company's future. The encouraging results to date from our ongoing drill program support an economic study on a potential high grade underground mine at Wassa. Results of this study are expected by mid-year."*

### Mineral Reserve and Mineral Resource Estimation

The Mineral Reserve and Mineral Resource estimates have been compiled by the Company's technical personnel in accordance with definitions and guidelines set out in the Definition Standards for Mineral Resources and Mineral Reserves adopted by the Canadian Institute of Mining, Metallurgy, and Petroleum and as required by Canada's National Instrument 43-101 - Standards for Disclosure for Mineral Projects ("NI

43-101").

Mineral Reserves and Mineral Resources were estimated using a gold price of \$1,300 and \$1,400 per ounce, respectively.

## Mineral Reserves

Mineral Reserves as of December, 31 2013 declined by 8% from December 31, 2012, largely as a result of mining depletion and the lower gold price assumptions used. Mineral Reserves were estimated on a gold price assumption of \$1,300 per ounce; lower than the gold price assumption of \$1,450 per ounce in the Company's December 31, 2012 estimate.

During 2013, the Company's development strategy focused on drilling at Wassa, where the Company increased Proven and Probable Mineral Reserves by 34% from December 31, 2012. This is despite a reduction in the gold price assumption used and depletion of 206,000 ounces of Mineral Reserves over the period. The cutoff grade used to determine the Wassa Main Mineral Reserves was 0.76 grams of gold per tonne ("g/t Au") and the life of mine strip ratio for Wassa Main is expected to be 6.0:1. Mineral Reserve grade at Wassa Main increased by 23% to 1.72 g/t Au. The bulk of this increased grade is as a result of the inclusion of higher grade ore at depth.

At Bogoso, mining depletion resulted in a reduction in Mineral Reserves in the actively mined Chujah and Bogoso North pits of 28%. Mining in these pits is expected to continue until Q3 2015. Grade in these pits is in line with previous estimates. Cutoff grades used to determine the Mineral Reserves in these pits averaged 1.5 g/t Au. After anticipated completion of the current pushbacks in the Chujah and Bogoso North pits in the second quarter of 2014, the remaining life of mine stripping ratio should be 2.0:1.

Mineral Reserves in Bogoso's open pit development projects reduced by 53% with the lower gold price assumption although grades increased by 7%. A Mineral Reserve estimate for Prestea Underground has been included for the first time subsequent to the conclusion of a positive feasibility study in June of 2013.

	Dec 31, 2013 Proven Mineral Reserve			Dec 31, 2013 Probable Mineral Reserve			Dec 31, 2013 Proven and Probable Mineral Reserve		
	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	Ounces (000)
Wassa Main	-	-	-	33,721	1.72	1,863	33,721	1.72	1,863
Father Brown	-	-	-	694	4.31	96	694	4.31	96
Stockpiles	438	0.68	10	59	0.54	1	497	0.67	11
Subtotal Wassa	438	0.68	10	34,473	1.77	1,960	34,911	1.75	1,970
Bogoso	2,930	2.65	250	1,731	2.59	144	4,661.52	2.63	394.02
Dumasi	3,116	2.39	239	5,826	2.36	443	8,941	2.37	682
Mampon	-	-	-	1,133	5.24	191	1,133	5.24	191
Prestea South	969	2.74	85	2,170	2.52	176	3,139	2.59	261
Prestea Underground	-	-	-	1,434	9.61	443	1,434	9.61	443
Stockpiles	106	1.79	6	-	-	-	106	1.79	6
Subtotal Bogoso	7,122	3	581	12,294	4	1,397	19,415	3	1,977
Total	7,559	2.43	590	46,767	2.23	3,357	54,327	2.26	3,947

### Notes to the Mineral Reserve Statement:

1. The stated Mineral Reserve for Bogoso includes the currently operational pits of Bogoso North and Chujah.
2. The stated Mineral Reserves have been prepared in accordance with the requirements of NI43-101 - Standards of Disclosure for Mineral Projects and are classified in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum's "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.

3. The 2013 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 Canada's NI 43-101.
4. The Mineral Reserves at December 31, 2013 were estimated using a gold price assumption of \$1,300 per ounce.
5. The slope angles of all pit designs are based on geo-technical 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. The parameters for the pit optimization program are based on a gold price of \$1,300 per ounce, and historical and projected operating costs at Bogoso and Wassa. Metallurgical recoveries are based on historical performance or estimated from test work and typically range from 60% to 95% for non-refractory ores and from 70% to 85% for refractory ores. A government royalty of 5% is included in the Mineral Reserves.
6. Numbers may not add due to rounding.

## Reconciliation of Mineral Reserves

The attached graphs present the Wassa, Bogoso and Company combined Mineral Reserve Reconciliation on an ounces basis between the December 31, 2012 and December 31, 2013.

Notes to the reconciliation of Mineral Reserves:

1. Gold price change represents changes resulting from a decrease in gold price used in the Mineral Reserve estimates from \$1,450 per ounce as at December 31, 2012 to \$1,300 per ounce as at December 31, 2013.
2. Exploration changes include changes due to geological modeling, data interpretation, resource block modeling methodology and completion of feasibility studies as well as exploration discovery of new mineralization.
3. Mining depletion represents the 2012 Mineral Reserve within the volume mined in 2013 with adjustments to account for stockpile addition and depletions during 2013 and, therefore, does not correspond with 2013 actual gold production.
4. Engineering includes changes as a result of changes in operating costs, mining dilution and recovery assumptions, metallurgical recoveries, pit slope angles and other mine design and permitting considerations.
5. Numbers may not add due to rounding.

## Mineral Resources

The Measured and Indicated Mineral Resources reported below are inclusive of the Proven and Probable Mineral Reserves as shown above and have been estimated in accordance with the requirements of NI 43-101. Previously the Company reported Mineral Resources exclusive of Mineral Reserves. This change in reporting has been made to align the Company with what it believes to be best practice in Canada. All comparisons made are to December 31, 2012 Measured and Indicated Mineral Resources inclusive of Mineral Reserves.

The total Measured and Indicated Mineral Resources as well as the Inferred Mineral Resources have been estimated on a gold price assumption of \$1,400 per ounce for December 31, 2013; lower than the gold price assumption of \$1,750 in the December 31, 2012 estimate. The economic cut-off grades for Mineral Resources are lower than those for Mineral Reserves and are indicative of the fact that the Mineral Resource estimates include material that may become economically viable under more favorable conditions including increases in gold price.

Wassa's total Measured and Indicated Mineral Resource has increased by 29% from 31 December 2012. This is largely due to the 37% increase in the Mineral Resource within the Wassa Main pit design and the inclusion of 289,000 ounces of Mineral Resource from the Wassa Underground deposit that sits below it.

The Measured and Indicated Mineral Resource in Father Brown and Father Brown Underground has decreased as a result of the reduction in the gold price assumption. Overall, the Measured and Indicated Mineral Resource grade for Wassa has increased from 1.59 g/t Au to 2.02 g/t Au.

Bogoso's Mineral Resource declined 35% from the last estimate primarily due to the lower gold price assumption used and to depletion in the pits where mining is currently ongoing. Overall grades increased in the Bogoso Measured and Indicated Mineral Resource by 15% and by 17% in the current mining pits.

	Dec 31, 2013 Measured Mineral Resources			Dec 31, 2013 Indicated Mineral Resources			Dec 31, 2013 Measured and Indicated Mineral Resources		
	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)	tonnes (000)	grade g/t Au	ounces (000)
Wassa Main	270	1.44	13	44,812	1.78	2,568	45,082	1.78	2,580
Wassa Underground	-	-	-	2,446	3.67	289	2,446	3.67	289
Father Brown	-	-	-	692	3.86	86	692	3.86	86
Father Brown Underground	-	-	-	1,000	6.47	208	1,000	6.47	208
Wassa Other	-	-	-	2,115	2.40	163	2,115	2.40	163
Subtotal Wassa	270	1.44	13	51,066	2.02	3,314	51,336	2.02	3,327
Bogoso	2,697	2.94	255	1,856	2.95	176	4,553	2.94	431
Dumasi	3,255	2.56	268	9,868	2.41	764	13,123	2.45	1,032
Mampon	-	-	-	1,553	4.79	239	1,553	4.79	239
Prestea South	986	2.87	91	3,318	2.62	279	4,304	2.67	370
Prestea Underground	-	-	-	1,356	14.50	632	1,356	14.50	632
Bogoso Other	-	-	-	3,835	2.64	325	3,835	2.64	325
Subtotal Bogoso	6,938	2.75	614	21,786	3.45	2,415	28,724	3.28	3,029
Total	7,208	2.70	627	72,852	2.45	5,729	80,060	2.47	6,356

Wassa's total Inferred Resource has decreased by 72% from 31 December 2012. This is largely due to the conversion of Inferred Resources to Indicated Resources following the extensive drill program at Wassa Main during 2013, which led to an increase of the Measured and Indicated Resource within the Wassa Main optimized shell as announced in November 2013.

Bogoso's Mineral Inferred Resource declined 34% from the last estimate. This is primarily due to the lower gold price assumption used for the 2013 Mineral Resource disclosure. Overall grades increased by 12% in comparison to 2012.

	Dec 31, 2013 Inferred Mineral Resources		
	tonnes (000)	grade g/t Au	ounces (000)
Wassa Main	313	1.28	13
Wassa Underground	646	3.10	64
Father Brown	40	1.85	2
Father Brown Underground	881	6.35	180
Wassa Other	85	2.93	8
Subtotal Wassa	1,964	4.23	267
Bogoso	288	2.08	19
Dumasi	-	-	-
Mampon	221	1.79	13
Prestea South	581	6.00	112
Prestea Underground	3,289	8.02	848
Bogoso Other	892	2.37	68
Subtotal Bogoso	5,024	6.46	1,044
Total	6,989	5.84	1,311

Notes to the Measured and Indicated Mineral Resource and the Inferred Mineral Resources:

1. The Mineral Resources were estimated in accordance with the requirements of NI 43-101.
2. The Mineral Resources for Wassa Other include Benso and Chichiwilli.
3. The Mineral Resources for Bogoso Other include Buesichem and Ablifa.
4. The Wassa Underground Mineral Resource has been estimated below the \$1,400 per ounce of gold pit shell using an economic gold grade cut-off of 2.6 g/t Au, which the Company believes would be the lower cut-off for underground.
5. The Father Brown Underground Mineral Resource has been estimated below the \$1,400 per ounce of gold pit shell using an economic gold grade cut-off of 2.9 g/t Au, which the Company believes would be the lower cut-off for underground.

6. Prestea Underground Mineral Resource has been estimated below the \$1,400 pit shell of Prestea South down to 3800m elevation using a gold cut-off at 4.74 g/t Au
7. Mineral Resources were estimated using optimized pit shells at a gold price of \$1,400 per ounce. Other than gold price, the same optimized pit shell parameters and modifying factors used to determine the Mineral Reserves were used to determine the Mineral Resources.
8. The Qualified Person reviewing and validating the estimation of the Mineral Resources is S. Mitchel Wasel, Golden Star Resources Vice President of Exploration.
9. Numbers may not add due to rounding.

## **Mineral Resource and Mineral Reserve Development**

The Company is currently drilling the Wassa Main deposit to determine the ultimate size of the deposit as well as to improve the understanding of the deposit. The drill program includes 20,000 meters of infill drilling and step-out drilling 250 meters to the south of the currently defined ore body. Early results from the drill program, which are not included in this Mineral Resource and Mineral Reserve update, were announced on January 30, 2014.

The Company's strategy is to grow production from low cost non-refractory ore sources whilst reducing overall operating costs. The expansion of the Wassa ore body and the potential development of an underground mine at Wassa are central to this strategy. The current Wassa Mineral Resource of 2.6 million ounces includes 289,000 ounces reflected as Wassa Underground Mineral Resource. It is possible that a greater proportion of the Mineral Resource will ultimately be mined by underground methods rather than in an open pit. A preliminary economic assessment of Wassa has recently commenced which will determine what portion of the enlarged ore body would be optimally mined via underground methods. The study is expected to be completed by the third quarter of 2014.

## **Company Profile:**

Golden Star is an established gold mining company that holds a 90% interest in both the Bogoso and Wassa open-pit gold mines in Ghana. Golden Star also has a 90% interest in the Prestea Underground mine in Ghana, which is currently undergoing permitting subsequent to a successful feasibility study completed in June 2013. In 2013, Golden Star sold 331,000 ounces of gold and the Company expects to produce 295,000 to 320,000 ounces of gold in 2014.

For further information on the Company, please visit [www.gsr.com](http://www.gsr.com).

## **Statements Regarding Forward-Looking Information:**

Some statements contained in this news release are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 and under Canadian securities laws. Such statements include the Company's estimates of Mineral Reserves and Mineral Resources; the timing for updating resource models in 2014; the upgrade of the tailings facility at Bogoso to Mineral Resource and Mineral Reserve during 2014; the life of mine stripping ratio at each of Wassa and Bogoso; the life of the Company's mines; the Company's 2014 production; the Company's ability to obtain and maintain all necessary permits and approvals; the timing of the preliminary economic assessment for Wassa underground mining; and the Company's 2014 exploration activities. Investors are cautioned that forward-looking statements are inherently uncertain and involve risks and uncertainties that could cause actual facts to differ materially. 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 Form 10-K for 2013. The forecasts contained in this press release constitute management's current estimates, as of the date of this press release, with respect to the matters covered thereby. We expect that these estimates will change as new information is received. While we may elect to update these estimates at any time, we do not undertake any estimate at any particular time or in response to any particular event.

## **Technical Information and Quality Control:**

The technical contents of this press release have been reviewed by S. Mitchel Wasel, BSc Geology, 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. The 2013 estimates of 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 results for Wassa quoted herein are based on the analysis of saw-split HQ/NQ diamond half core or a three kilogram ("kg") single stage riffle split of a nominal 25 to 30 kg Reverse Circulation chip sample which has been sampled over nominal one meter intervals (adjusted where necessary for mineralized structures). Sample preparation and analyses have been carried out at SGS Laboratories, which is independent of the Company, in Tarkwa using a 1,000 gram slurry of sample and tap water which is prepared and subjected to an accelerated cyanide leach (LEACHWELL). The sample is then rolled for twelve hours before being allowed to settle. An aliquot of solution is then taken, gold extracted into Di-iso Butyl Ketone (DiBK), and determined by flame Atomic Absorption Spectrophotometry (AAS). Detection Limit 0.01ppm.

The results for Bogoso herein are based on the analysis of saw-split HQ sized (64mm) diamond half core or a three kilogram single stage riffle split of a nominal 25 to 30 kg Reverse Circulation chip sample which has been sampled over nominal one meter intervals (adjusted where necessary for mineralized structures). Sample preparation and analyses have been carried out at SGS Laboratories in Tarkwa using a 50 gram assay charge with a flame Atomic Absorption Spectrophotometry (AAS) finish and a detection limit of 0.01 ppm.

All analytical work is subject to a systematic and rigorous Quality Assurance-Quality Control. At least 5% of samples are certified standards and the accuracy of the analysis is confirmed to be acceptable from comparison of the recommended and actual "standards" results. The remaining half core is stored on site for future inspection and detailed logging, to provide valuable information on mineralogy, structure, alteration patterns and the controls on gold mineralization.

#### **Cautionary Note to US Investors Concerning Estimates of Measured and Indicated Mineral Resources**

This press release uses the terms "Measured Mineral Resources" and "Indicated Mineral Resources". The Company advises US investors that while these terms are recognized and required by National Instrument 43-101, the US Securities and Exchange Commission ("SEC") does not recognize them. Also, disclosure of contained ounces is permitted under Canadian regulations; however the SEC generally requires Mineral Resource information to be reported as in-place tonnage and grade. **US Investors are cautioned not to assume that any part or all of the mineral deposits in these categories will ever be converted into Mineral Reserves.**

#### **Cautionary Note to US Investors concerning estimates of Inferred Mineral Resources**

This press release uses the term "Inferred Mineral Resources". The Company advises US investors that while this term is recognized and required by National Instrument 43-101, the SEC does not recognize it. "Inferred Mineral Resources" have a great amount of uncertainty as to their existence, and great uncertainty as to their economic and legal feasibility. It cannot be assumed that all or any part of Inferred Mineral Resources will ever be upgraded to a higher category. In accordance with Canadian rules, estimates of Inferred Mineral Resources cannot form the basis of feasibility or other economic studies. **US investors are cautioned not to assume that any part or all of the Inferred Mineral Resource exists, or is economically or legally mineable.**

To view Graph 1, please visit the following link: <http://www.marketwire.com/library/20140209-gsr210-F1-g.jpg>

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To view Graph 2, please visit the following link: <http://www.marketwire.com/library/20140209-gsr210-F2-g.jpg>

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