AZUMAH RESOURCES LIMITED

**ASX Announcement**
**ASX: AZM**
**30 January 2019**

# Wa Gold Project Hits 1.0Moz Ore Reserve

- **65% increase in Ore Reserve to 1,028,200oz (18Mt at 1.77g/t Au)**
- **Feasibility Study well advanced. Present status:**
  - **US$177M $NPV_{5\%}$ and 35% IRR (Pre-tax. Post gov. royalty)**
  - **US$270M net cash flow (Pre-tax. Post gov. royalty)**
  - **1.6-year payback of US$117M establishment capital**
  - **11-year operation, averaging 107,000ozpa (years 1 to 6)**
  - **2.06g/t Au average process grade (years 1 to 8)**
  - **CIL plant of up to 2.3Mtpa (oxide ore)**
  - **Establishment capital intensity of US$114/ore reserve oz**

## Upside

- **Several opportunities to improve operational and economic performance prior to study finalisation, scheduled for Q3 2019**
- **34,800oz Inferred material within current mine designs and not able to be included in Ore Reserve[#]**
- **Possible 156,000oz Inferred material within pit shells identified by sensitivity analysis using pit optimisation techniques, not included in Ore Reserve[#]**
- **Evolving underground mining option at Kunche and Bepkong**
- **40,000m multi-target drilling campaign underway to increase Mineral Resources, Ore Reserves and for discoveries within vast 2,400$km^2$ of prospective tenure**

## Implementation

- **Project now well primed for a 2019 development decision**
- **15-year Mining Licences in place. EPA licencing well advanced.**
- **Excellent existing infrastructure including grid power to mine gate, strong local community and government endorsement. No communities to relocate**

Azumah Managing Director, Stephen Stone said **"The Wa Gold Project is now transformed into an extremely compelling development opportunity, without even considering the evolving prospect of underground mining presented by the recent discovery of high-grade below-pit mineralisation at Kunche and Bepkong.**

**"Full-credit to our joint venture partner and Project Manager, Ibaera Capital, which has increased Ore Reserves by 65% to over 1.0Moz and redefined the Project with operational and financial metrics that unequivocally reposition it up with its peers.**

**"The Wa Gold Project is now well primed to be Ghana's next commercial-scale gold mine, with mining leases already granted, EPA permits well advanced, grid power to site and the strong support of the Ghana government.**

**"The remainder of 2019 will be dedicated to finalising the Feasibility Study and putting everything in place for a development decision."**

**"We also have several opportunities to materially enhance the Project, not the least through continued exploration of our vast 2,400km$^2$ prospective tenure - and these are all being vigorously pursued".**

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***Note 1:*** *All of Azumah's Ghana interests are held through its wholly owned Ghana subsidiary, Azumah Resources Ghana Limited (AZG). In 2017 Azumah executed an Earn-In and Shareholders Agreement (EISA) with Ibaera Capital GP Limited ("Ibaera"), whereby Ibaera can earn an initial 42.5% interest in AZG (i.e. an incorporated joint venture), and therefore directly in the Wa Gold Project (not in AZM), by spending US$11.5M over two years (refer ASX release dated 2 September 2017). If Azumah elects not to co-contribute pro-rata after that, Ibaera may increase its interest to a maximum of 47.5% for a total minimum expenditure of US$13.25 million (~A$17M). Ibaera has not yet completed its initial earn in expenditure.*

***Note 2****: Azumah holds a 13% interest in Castle Minerals Limited (ASX: CDT) which holds extensive tenure in Ghana adjacent to the Wa Gold Project. These licences do not form part of the joint venture with Ibaera.*

***Note 3****: All financials presented are pre-tax (except for included VAT), and post government royalty of 5%.*

***# Inferred Mineral Resources:*** *Only Measured and Indicated material were categorised as ore for the optimisation process. No inferred Mineral Resources have been included in the Ore Reserves or the associated production schedule. However, there is 34,800oz of Inferred material inside the current pit designs which are not included and are currently defined as waste. Also, pit optimisation studies using inferred material has highlighted that there is ~156,000oz of Inferred material within the optimised pit shells when inferred material has been included as a sensitivity. Note, the inferred material for the mine design and for the pit optimisation sensitivity option is* ***not*** *additive. Subject to drilling and results, this provides an opportunity to increase Ore Reserves. However, by definition, there is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration and other work will result in their determination as either Measured or Indicated Mineral Resources that would enable the current Inferred material to be eligible for consideration as Ore Reserves.*

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West African gold explorer and developer Azumah Resources Limited (ASX: AZM)("Azumah") is pleased to report that Ore Reserves at its Wa Gold Project, Ghana ("Project") have been boosted 65% or 404,178oz to 1,028,178oz gold (Table 1).

A Feasibility Study Update ("FSU") based on the Ore Reserves is well advanced and has outlined a very robust, 11-year operational-life mine producing an average of 107,000oz gold per year in its first six years and returning a pre-tax $NPV_{5\%}$ of US$177M, an IRR of 35% and a pre-tax net cash flow of US$270M, inclusive of government royalties.

The Project compares extremely well with its operating peers given its low establishment capital intensity of US$114 per ore reserve ounce and an All-In-Sustaining Cost ("AISC") of US$886/oz underpinning strong operating margins that see its US$117M establishment capital paid back in 1.6 years.

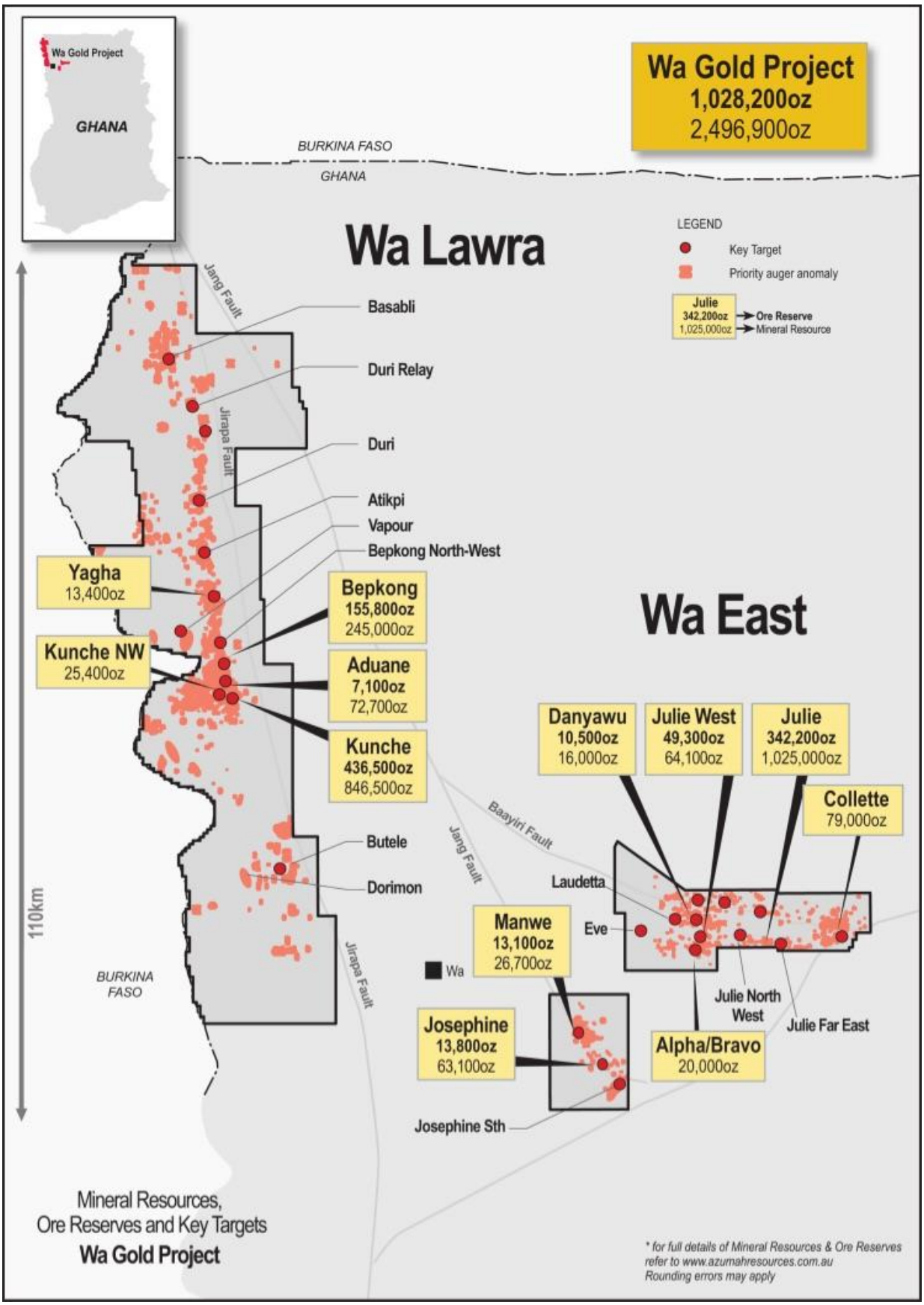
The average grade of ore processed over the first eight years of operations is 2.06g/t Au, the average life-of-mine ("LOM") gold recovery is 91% and the average LOM plant throughput is 1.6Mtpa, with it able to treat up to 2.3Mtpa of softer oxide ore.

With 15-year mining leases granted, EPA operating permits well advanced, excellent existing infrastructure, a safe operating jurisdiction and strong local endorsement, the Project is now extremely well positioned to move towards the completion of its Feasibility Study in Q3 2019 and then, a development decision.

The fast-evolving prospect of underground mining and a vast prospective tenure bode well for production growth.

(For details and material assumptions refer to Tables A, B and 1 – 15, Graphs 1 – 5, Figs 1 to 4, Appendix 1: Sections 1 - 4).

**Fig 1: Wa Gold Project Mineral Resources, Ore Reserves, key targets and prospects**



### Table 1: Ore Reserve summary – January 2019

| | Proved | | | Probable | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| (As at January 2019) | Tonnes (Mt) | Grade g/t Au | Gold oz | Tonnes (Mt) | Grade g/t Au | Gold Oz | Tonnes (Mt) | Grade g/t Au | Gold oz |
| **Kunche** | 8.0 | 1.51 | 388,600 | 0.9 | 1.65 | 47,900 | 8.9 | 1.52 | 436,500 |
| **Bepkong** | 2.4 | 1.65 | 124,400 | 0.7 | 1.41 | 31,300 | 3.0 | 1.59 | 155,800 |
| **Aduane** | | | | 0.2 | 1.11 | 7,100 | 0.2 | 1.11 | 7,100 |
| **Julie** | 1.2 | 2.11 | 83,600 | 3.6 | 2.24 | 258,600 | 4.8 | 2.21 | 342,200 |
| **Julie West** | | | | 0.4 | 3.59 | 49,300 | 0.4 | 3.59 | 49,300 |
| **Danyawu** | | | | 0.1 | 4.63 | 10,500 | 0.1 | 4.63 | 10,500 |
| **Josephine** | | | | 0.3 | 1.29 | 13,800 | 0.3 | 1.29 | 13,800 |
| **Manwe** | | | | 0.2 | 1.91 | 13,100 | 0.2 | 1.91 | 13,100 |
| **Total** | **11.6** | **1.60** | **596,700** | **6.4** | **2.09** | **431,500** | **18.0** | **1.77** | **1,028,200** |

Numbers have been rounded

## ORE RESERVE RE-ESTIMATE AND FEASIBILITY STUDY STATUS UPDATE

The Project is located in the Upper West Region of Ghana, West Africa and has its exploration base approximately 45km north of the regional capital of Wa.

The Project is owned 100% by Azumah through its wholly owned Ghana domiciled subsidiary, Azumah Resources Ghana limited ("AZG").

AZG holds a mining lease encompassing the Kunche, Bepkong and Aduane deposits (ML10/1). The Julie deposit is situated on a separate mining lease (ML10/5) held through Phoenix Resources Ltd, a wholly owned subsidiary of AZG. Now that there has been estimated Ore Reserves for the Julie West, Manwe, Josephine and Danyawu deposits a mining lease(s) will be applied for to encompass these deposits which account for 86,700oz (8%) of the total Ore Reserve.

Ibaera Capital ("Ibaera") can earn a direct interest in the Project by funding AZG, and hence the Project, through to a development decision.

Within Azumah's 2,400km$^2$ licence tenure, three flagship deposits have been discovered and extensively drilled. These are the Kunche and Bepkong deposits in the Wa-Lawra region, adjacent to the Black Volta River and Ghana's border with Burkina Faso, and at Julie in the Project's Wa East region, approximately 80km to the east.

Several satellite deposits have also been identified at each mining camp. Numerous early-stage targets and more advanced prospects have been identified throughout the Project and provide considerable opportunity for increases in Mineral Resources and Ore Reserves.

Mineral Resources have progressively grown through a focused, systematic approach to exploration of the large tracts of prospective Birimian terrain within the tenure, the rocks that host the majority of West Africa's gold mines. Much of the tenure is covered in soil, alluvium or laterite - so most discoveries have been 'blind'.

These Mineral Resources provide the basis for the estimation of Ore Reserves.

Access to the Project is excellent with a sealed road from Ghana's capital, Accra (680km to the south), a commercial airport at Tamale (300km to the east) and a soon to be operational commercial airport at Wa (45km to the south).

## Table 2: Key operational and financial information

| Item | Details | Comment |
|---|---|---|
| **Operational:** | | |
| Total contained gold mined | 1,028,178 | |
| Grade processed (yrs 1-8) | 2.06g/t Au | 1.77g/t Au LOM |
| Average process plant throughput (LOM) | 1.64Mtpa | 2.3Mtpa oxide ore |
| Average Gold Recovery (LOM) | 91% | Primary crush, SAG and CIL |
| Total ore tonnes mined (LOM) | 18.0Mt | |
| Total waste tonnes mined (LOM) | 107.7Mt | |
| Strip Ratio (Waste to Ore) | 5.98 | |
| Annual gold production (yrs 1-6) | 107,000ozpa | 85,072ozpa (yrs 1 – 11)(LOM) |
| Total gold produced / recovered | 935,798oz | |
| Total operational life (LOM) | 11-yrs | Incl. 3-yrs stockpile processing |
| **Site Cash Costs:** | | |
| Mining operating cost | US$2.94/t mined | US$3.59/t (LOM incl. Julie ore haulage) |
| Process plant operating cost (Incl G&A) | US$15.20/t processed | $293/oz |
| General and Administration cost (G&A) | US$2.45/t processed | $56.3/oz |
| **Capital cost:** | | |
| Establishment capital cost: | US$117.0M | |
| Sustaining capital | US$18.7M | |
| Deferred capital | US$19.9M | (incl. Julie flotation plant and haul road) |
| **Project economics (pre-tax):** | | |
| Net revenue | US$1.151Bn | |
| C1 cash costs | US$771/oz | LOM |
| All-in-sustaining-cost (AISC) | US$886/oz | LOM |
| Establishment capital pay-back | 1.6yrs | 2.3-yrs incl Stage 2 Julie plant, haul road etc |
| Capital intensity (Establishment) | US$114/ reserve oz | |
| Pre-tax $NPV_{5\%}$ | US$176.6M | 100% ownership. Government 10% FCI excl. |
| Pre-tax IRR | 35.3% | |
| Pre-tax net cash flow | US$270M | Incl. 5% royalty |
| Ghana government royalties (5%) | US$65/oz | US$61M LOM |

1. All financials provisional and subject to completion of Feasibility Study Q3 2019
2. All economic factors quoted as pre-tax (other than VAT) and post royalty of 5%.
3. The Feasibility Study Update is incomplete and taxation, fiscal regime, project financing structure etc are yet to be finalised
4. All financials reported on a 100% Azumah ownership basis at US$1,300/oz gold price and USD:AUD exchange rate of 0.75
5. **LOM**: Life of Mine is 11-years. 8-years mining and 3-years stockpile processing
6. **C1: C**ash costs: All site operational cash costs
7. **AISC:** Cash costs + royalties + levies + life of mine sustaining capital costs (World Bank Gold Council Standard definition)

## STATUS OF FEASIBILITY STUDY UPDATE and ORE RESERVE RE-ESTIMATE

A 2015 Feasibility Study ("DFS") estimated a JORC 2012 Ore Reserve of 624,000oz Au (9.1Mt at 2.14g/t Au) and presented the technical and commercial components of the Project (ASX release March 2015). No decision to proceed to development was made.

Capital costs were substantially reduced by a subsequent 2016 Study review while Ore Reserves remained the same (ASX release 9 May 2016).

A comprehensive review and update ("FSU") to these earlier Studies is now well advanced and is being managed by Ibaera, on behalf of Azumah Resources Ghana Limited ("AZG").

As part of the FSU, a new Ore Reserve has been estimated and reported in accordance with the JORC Code 2012. Preliminary pre-tax economics are also reported.

The FSU is scheduled for completion in Q3 2019.

Engineering and cost estimations have been done to a ±30% level of accuracy, consistent with an update of this nature and the requirement for an Ore Reserve Statement.

An overall contingency of 9.6% has been estimated and included.

The following parties have contributed to the FSU:

**Table 3: Contributors to 2019 Feasibility Study Update**

| Item | Contributor |
|---|---|
| Project Management | Ibaera Capital |
| Mining costs | Orelogy Consulting Pty Ltd (and mining contractors) |
| Metallurgical | Minnovo Pty Ltd |
| Gold price | Azumah / Ibaera Capital |
| Processing/Capital cost | Minnovo Pty Ltd |
| Social and Environmental | SAL Consult (Ghana) |
| Government | Ibaera Capital |
| Tenure | Azumah |
| Hydrology | Knight Piésold |
| Geotechnical | Peter O'Bryan & Associates |
| Mining dilution and recovery | Orelogy Consulting Pty Ltd |
| Discount rate | Azumah / Ibaera Capital |

## PROJECT CONFIGURATION

The proposed Project is very similar in overall concept to the 2015 DFS, and the 2016 update, which was based on three key deposits at Kunche, Bepkong and Julie and an Ore Reserve of 624,000oz Au (ASX releases 23 March 2015 and 9 May 2016).

The throughput capacity of the original plant design located adjacent to the Kunche deposit has been increased by approximately 20% and is able to process up to 2.3Mtpa of softer oxide material.

Mining will comprise staged extraction on a contract mining basis over an initial 8-years from eight individual open pits located in the two broad regions, Wa-Lawra and Wa East. The deposits to be mined in Wa-Lawra are Kunche, Bepkong and Aduane and the deposits to be mined in Wa East are Julie, Julie West, Danyawu, Manwe, and Josephine.

Accordingly, mining schedules have been reconfigured to account for changes to existing pit designs and several new satellite pits to the main Kunche-Bepkong and Julie pits that have resulted from recent exploration success.

The FSU references an optimised mine plan focused on processing higher grade ore earlier in the mine life, with Julie fresh ore stockpiled and processed on a campaign basis.

Processing of stockpiled marginal materials will continue for 3-years after the cessation of mining, for a total operational life of 11-years.

The mine plan produces gold ore onsite from a conventional CIL process plant. An additional fine grinding/flotation circuit is to be installed ahead of when Julie primary ore is to be mined.

The FSU has addressed a wide range of activities including but not limited to: mine planning, open pit optimisation, final and interim stage pit designs, mine scheduling, and mining cost estimations. It has also considered and includes waste and overburden removal, geotechnics and slope design, ROM pads based at the two sites, haul roads to the process plant, haulage loading facilities, water management, workshops, administration buildings, traffic management and other associated mine and facility infrastructure.

### Excellent Infrastructure

The Project has the advantages of:

- a major sealed road from Accra, through the Upper West regional capital of Wa, to the present exploration base. The base will be expanded to serve as the operational and main accommodation camp;
- a 161kV power line that extends within 3 km of the proposed process facility;
- approval in place to extract water from the Black Volta River which is only 3km to the west of the process plant;
- local mobile and satellite communications are excellent; and
- local topography in and around the proposed mining sites is considered generally flat with some minor topographical relief. Flora comprises light to moderately dense vegetation and scrub. Local communities undertake generally subsistence level farming on a seasonal basis.

### Julie Haul Road

To ensure ore can be delivered to the Kunche plant to meet the requirements of the mining schedule at the desired production rates, discussions with local road authorities are underway for a purpose-built 82km haulage road from Julie. This will include the use or upgrading of existing sealed and unsealed public roads, with new diversions around settlements or for short cuts.

## MINERAL RESOURCE ESTIMATE FOR CONVERSION TO ORE RESERVES

The total Mineral Resource estimate used as a basis for the estimation of the Ore Reserve is 49.2Mt at 1.6 g/t Au for 2,496,900oz comprising (JORC 2012)(Table 4)(Appendix 1)(ASX release 28 September 2018):

- 12.5Mt of Measured material at 1.7g/t Au for 675,000oz;
- 16.3Mt of Indicated material at 1.8g/t Au for 927,800oz; and
- 20.4Mt of Inferred material at 1.4g/t Au for 894,000oz

These Mineral Resources are evenly distributed between the Wa-Lawra and Wa East regions.

The cut-off grades used to report the above Mineral Resource were 0.5g/t Au for all Kunche-Bepkong camp deposits (Wa-Lawra region), 0.5g/t Au for the Julie and Collette camp deposits (Wa East region) and 1.0g/t Au for all other Wa East region deposits.

The Mineral Resources comprise a total of 12 deposits of which 8 contain Measured and Indicated material eligible for conversion to an Ore Reserve.

The Mineral Resources are reported inclusive of the Ore Reserves.

**Table 4: Mineral Resource Estimate – JORC Code 2012 – updated 28 September 2018**

| | | Measured | | | Indicated | | | Measured + Indicated | | | Inferred | | | Grand Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Deposit** | **Cutoff Au g/t** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** |
| **Wa-Lawra:** | | | | | | | | | | | | | | | | |
| **Kunche** | 0.5 | 8,835 | 1.6 | 446,000 | 3,404 | 1.3 | 145,000 | 12,239 | 1.5 | 591,000 | 7,616 | 1.0 | 255,700 | 19,855 | 1.3 | **846,500** |
| **Bepkong**** | 0.5 | 2,220 | 1.8 | 128,000 | 1,700 | 1.3 | 73,000 | 3,920 | 1.6 | 201,000 | 1,170 | 1.2 | 44,000 | 5,090 | 1.5 | **245,000** |
| **Aduane** | 0.5 | | | | 322 | 1.2 | 12,800 | 322 | 1.2 | 12,800 | 1,491 | 1.3 | 59,900 | 1,812 | 1.3 | **72,700** |
| **Kunche NW** | 0.5 | | | | | | | | | | 694 | 1.1 | 25,400 | 694 | 1.1 | **25,400** |
| **Yagha** | 0.5 | | | | | | | | | | 333 | 1.3 | 13,400 | 333 | 1.3 | **13,400** |
| **Wa East:** | | | | | | | | | | | | | | | | |
| **Julie*** | 0.5 | 1,490 | 2.1 | 101,000 | 9,300 | 1.9 | 572,100 | 10,790 | 1.9 | 673,000 | 6,360 | 1.7 | 352,000 | 17,150 | 1.9 | **1,025,000** |
| **Collette**** | 0.5 | | | | | | | | | | 1,690 | 1.5 | 79,000 | 1,690 | 1.5 | **79,000** |
| **Julie West** | 1.0 | | | | 455 | 4.0 | 58,900 | 455 | 4.0 | 58,900 | 68 | 2.4 | 5,100 | 523 | 3.8 | **64,100** |
| **Danyawu** | 1.0 | | | | 105 | 4.2 | 14,200 | 105 | 4.2 | 14,200 | 38 | 1.5 | 1,800 | 143 | 3.5 | **16,000** |
| **Alpha/Bravo** | 1.0 | | | | | | | | | | 148 | 4.2 | 20,000 | 148 | 4.2 | **20,000** |
| **Josephine** | 1.0 | | | | 709 | 1.5 | 34,500 | 709 | 1.5 | 34,500 | 580 | 1.5 | 28,600 | 1,290 | 1.5 | **63,100** |
| **Manwe** | 1.0 | | | | 257 | 2.1 | 17,300 | 257 | 2.1 | 17,300 | 192 | 1.5 | 9,400 | 450 | 1.9 | **26,700** |
| | | | | | | | | | | | | | | | | |
| **Total** | | **12,545** | **1.7** | **675,000** | **16,252** | **1.8** | **927,800** | **28,797** | **1.8** | **1,602,700** | **20,380** | **1.4** | **894,300** | **49,178** | **1.6** | **2,496,900** |

Note: Values have been rounded. A lower cut-off of 0.5g/t Au was used for Kunche, Bepkong, Aduane, Julie and Collette, and a lower cut-off of 1.0g/t Au was used for Julie West and Danyawu

*Julie resources completed by CSA 2018. **Bepkong and Collette resources from ASX announcement 2 September 2014.

## ORE RESERVE RE-ESTIMATION AND CLASSIFICATION

### Competent Person

Orelogy Consulting Pty Ltd was responsible for the mining component of the FSU and its report titled "Wa Gold Project Mining Study" dated 18 January 2019.

As such, Orelogy have developed an Ore Reserve estimate for Kunche, Bepkong, Aduane, Julie, Julie West, Danyawu, Josephine and Manwe pits in accordance with the guidelines of the JORC Code 2012.

The Competent Person for the Ore Reserve estimate, Mr Steve Craig of Orelogy Consulting Pty Ltd, visited the Project site and all deposits in July 2018 and again in November 2018.

The Ore Reserve estimate has been reviewed internally by Orelogy Consulting Pty Ltd. No external reviews or audits have been undertaken on the Ore Reserve estimate.

Mineral Resources were converted to Ore Reserves in line with the material classifications which reflect the level of confidence within the Mineral Resource estimate. The Ore Reserve reflects that portion of the Mineral Resource which can be economically extracted by open pit mining methods.

In line with the JORC Code 2012 guidelines, the Proved Ore Reserve estimate is based on Mineral Resources classified as Measured and the Probable Ore Reserve is based on Indicated classified mineral resource.

### Summary of Ore Reserve estimate

The updated Ore Reserve estimate is a total of 18 Mt at 1.8g/t Au for 1,028,200 contained ounces of gold. This comprises a Proved Ore Reserve of 11.6Mt at 1.6g/t Au for 596,700 ounces (65% of total) and a Probable Ore Reserve of 6.4Mt at 2.1g/t Au for 431,500 ounces (35% of total)(NB: Numbers have been rounded).

This represents a 65% increase, or an additional 404,200oz, to the previous Ore Reserve of 624,000oz (refer ASX release 2 September 2014). Ore tonnes have increased 98% additional and the Ore Reserve grade has reduced 17%.

### Inferred Mineral Resources

Only Measured and Indicated material were categorised as ore for the optimisation process. No Inferred Mineral Resources have been included in the Ore Reserves or the associated production schedule. However, there is 34,800oz of Inferred material inside the current pit designs which are not included and are currently defined as waste. Also, pit optimisation studies using Inferred material has highlighted that there is ~156,000oz of Inferred material within the optimised pit shells when Inferred material has been included as a sensitivity.

Note: The Inferred material for the mine design and for the pit optimisation sensitivity option is not additive. Subject to drilling and results, this provides an opportunity to increase Ore Reserves. However, by definition, there is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration and other work will result in their determination as either Measured or Indicated Mineral Resources that would enable the current Inferred material to be eligible for consideration as Ore Reserves.

**Cut-Off grades**

The Ore Reserve is reported using variable cut-off grades (Table 5). The cut-off grades vary by deposit due to variations in gold recoveries and costs for processing and ore haulage (Table 10):

**Table 5: Cut-off grades (g/t Au)**

| Deposit | Oxide | Trans | Fresh |
|---|---|---|---|
| Kunche | 0.32 | 0.39 | 0.53 |
| Bepkong | 0.31 | 0.33 | 0.44 |
| Aduane | 0.32 | 0.39 | 0.53 |
| Julie Main | 0.68 | 0.72 | 0.89 |
| Julie West | 0.66 | 0.70 | 0.87 |
| Danyawu | 0.65 | 0.69 | 0.86 |
| Josephine | 0.66 | 0.69 | 0.86 |
| Manwe | 0.64 | 0.68 | 0.84 |

The “breakeven cut-off grade” was determined to be between 0.31g/t Au for oxide material at Bepkong to 0.89g/t Au for primary ore at Julie.

**Reasons for Ore Reserve increase**

The reasons for the increase in Ore Reserve reported in this 2019 Ore Reserve estimate are as follows:

- an increased Mineral Resource base arising from additional exploration drilling and mineralisation discovery (Aduane, Julie West, Danyawu, Manwe and Josephine);
- optimisation of the process throughput rates through debottlenecking studies and a reduction in operating costs which reduced cut-off grades;
- revision of geotechnical parameters with steeper slopes in fresh rock;
- detailed modelling of dilution and ore loss; and
- reduction in mining and ore haulage costs (updated contractor rates).

This increase is attributed to all eight deposits (Table 6):

**Table 6: Sources of changes in Ore Reserves**

| Source | Gold Oz |
|---|---|
| **Total Ore Reserve (As at August 2014)** | **624,000 (9.08Mt at 2.14g/t Au)** |
| **Additions January 2019** | |
| **Kunche** | +127,500 |
| **Bepkong** | +42,800 |
| **Julie** | +140,200 |
| **Total Additions To Existing Deposits** | **310,500** |
| **Total Additions From New Deposits (January 2019)** | **93,800** |
| **Grand Total Additions** | **404,200** |
| **Total Ore Reserve (January 2019)** | **1,028,200 (18Mt at 1.77g/t Au)** |

Numbers have been rounded

## Optimisation and Ore Reserve "Modifying Factors"

Modifying Factors are the key inputs into the mining optimisation and pit shell outline model and comprise all the latest physical, technical and economic parameters applied to the orebody to determine the "ideal" open pit excavation geometry.

Modifying Factors considered during the mine planning process include, but are not limited to; mining dilution and ore loss, slope design criteria and practical mining considerations, processing recoveries, operating costs, revenue factors, social and environmental factors, statutory royalties and other financial aspects of the project. These factors are detailed in Table 7.

### Revenue factors

In all cases, a revenue factor of 1.00 was used for pit design purposes.

The pit optimisation studies show Project upside and an overall improvement in economics with a potential increase in mine life when using higher prices, inclusion of inferred material or lower mining and processing costs.

There is no other revenue associated with any co-product or by-products.

### Dilution and Ore Losses

The Ore Reserve includes an allowance for mining dilution and ore loss (the Mineral Resource models contain no allowance for dilution or mining recovery).

Orelogy developed a mining model for each deposit with dilution varying from 4.1% to 45.7% (average of 16.5%) and ore losses varying from 1.7% to 24.4% (average of 7.9%).

The method considered most suitable to these deposits, given the selective mining method, is to apply edge dilution. Orelogy assessed the effect of applying a dilution / ore loss allowance along the edge blocks in the resource model and selected a skin-out option due to the high negative impact of any ore loss in the narrow structurally controlled deposits. This was applied to all models including the Inferred only deposits and is summarised in Table 8.

### Mine design

The Kunche deposit consists of one main pit with five smaller satellite pits. The Bepkong deposit contains two pits and the Aduane deposit includes six small pits. In total, the Kunche region contains 12.2Mt of ore at 1.53g/t of Au at a stripping ratio of 5.4.

## Table 7: Details of Modifying Factors

| Area | Item | | Unit | Value | Comments |
|---|---|---|---|---|---|
| **REVENUE** | Metal Prices | Gold | $/oz | $1,300 | |
| | Other | Currency | $ | USD | |
| | | Discount Rate | % | 5.00 | |
| | | Government Royalty | % of sales | 5.00 | |
| | | Dore Transport and Refining Charge | $/oz | 4.13 | |
| **PHYSICALS** | Bulk Density | | dt/bcm | var. | In Resource Block models |
| | Mining | Dilution | % | var. | Modelled as edge dilution based on a function of the orebody geometry, block size and mining method. Dilution varies from 4.1% to 45.7% with an average of 16.5%. |
| | | Ore Losses | % | var. | Ore losses modelled as part of dilution due to waste material diluting ore blocks below economic cut-off. Ore losses vary from 1.7% to 24.4% with an average of 7.9%. |
| | | Moisture content | % | 3 | Used only for Julie ore haulage |
| | | Pit Slopes including ramp allowances | Deg | var. | Variable by pit and depth from 32.5 degrees in Oxide to 53.1 degrees in Fresh |
| | Processing | Oxide CIL process rate (K, B, J) | Mtpa | 2.30, 2.30, 2.08 | Plant throughput rates provided by Minnovo |
| | | Trans CIL process rate (K, B, J) | Mpta | 1.76, 2.04, 1.85 | K = Kunche & Aduane, B = Bepkong, J = Julie, Julie West, Danyawu & Josephine |
| | | Fresh CIL proces rate (K, B) | Mtpa | 1.28, 1.64 | |
| | | Fresh Float process rate (J) | Mtpa | 1.60 | Primary ores from J pits require flotation, regrind and re-leach circuit |
| | Process Recovery | Oxide (K, B, J) | % | 94.3, 93.3, 90.8 | |
| | | Trans (K, B, J) | % | 91.1, 93.3, 90.8 | |
| | | Primary (K, B, J) | % | 89.7, 93.0, 90.0 | |
| NB K = Kunche. B = Bepkong. J = Julie | | | | | |

**Table 8: Ore loss and dilution by resource**

| Deposit | Dilution | Ore Loss |
|---|---|---|
| **Kunche** | 8% | 5% |
| **Bepkong** | 9% | 4% |
| **Aduane** | 11% | 6% |
| **Julie** | 23% | 5% |
| **Julie West** | 20% | 6% |
| **Collette** | 7% | 15% |
| **Danyawu** | 5% | 10% |
| **Josephine** | 4% | 24% |
| **Manwe** | 4% | 13% |

The Julie deposit consists of two large pits with nine smaller satellite pits. The other four deposits (Julie West, Danyawu, Josephine and Manwe) have single pits. In total the Julie region contains 5.9Mt of ore at 2.28g/t of Au at a stripping ratio of 7.2.

The design criteria for the pits were developed on the basis of maximising recovery of ore at the base of the pits whilst ensuring the operability is maintained. The optimisation shells were used as a guide for pit designs. Every effort was made to minimise waste but not to the detriment of ore recovery.

Pit designs and interim cutbacks have been designed to suit a 120t excavator and 90t payload dump trucks. The parameters used were:

- A minimum mining width of 20m.
- Dual-lane ramp width of 24m and single-lane ramp width of 14m.
- Ramp gradient of 10%.

Minimum mining widths were also applied at the pit optimisation stage to ensure an appropriate starting point for mine design purposes.

All pits were developed from the base up in 5m benches with berms inserted where the height of the wall exceeded 20m bench height in fresh rock or 10m in transitional and oxide material. Shallow pits with a depth of less than 50m were designed with single lane ramp width (14m) for 90t trucks for the full depth with passing bays located at a berm level. Deeper pits of more than 50m vertical depth were designed with a single lane ramp width (14m) for 90t trucks for the final 50m (maximum) and dual lane ramps (24m width) for 90t trucks for remaining ramp length to the surface.

## Mining method

A conventional open pit mining method was maintained as the optimal mining method for the style of mineralisation and mining rate whereby all ore is processed and all waste is placed within a waste dump. There will be opportunities to backfill certain pits, but this will need additional deeper drilling to ensure deeper ore is not sterilised.

The ore production schedule assumes Kunche is mined first with initial pre-stripping over a 6-month period to provide mine waste for infrastructure and construction purposes. Construction of the fine grind circuit and the Julie ore haul road to enable mining and processing of the generally higher-grade Julie ore will commence in Year 2 of the Project with first ore from Julie being processed towards the end of Year 2.

All ore will be hauled to Kunche using 41 tonne capacity standard road trains and will be stockpiled at Kunche in a number of off-ROM stockpiles based on grade and oxidation state. Short term blending will occur on the ROM to ensure production rates through the mill can be maintained.

**Fig 2: Kunche-Bepkong deposits and proposed site infrastructure arrangement**

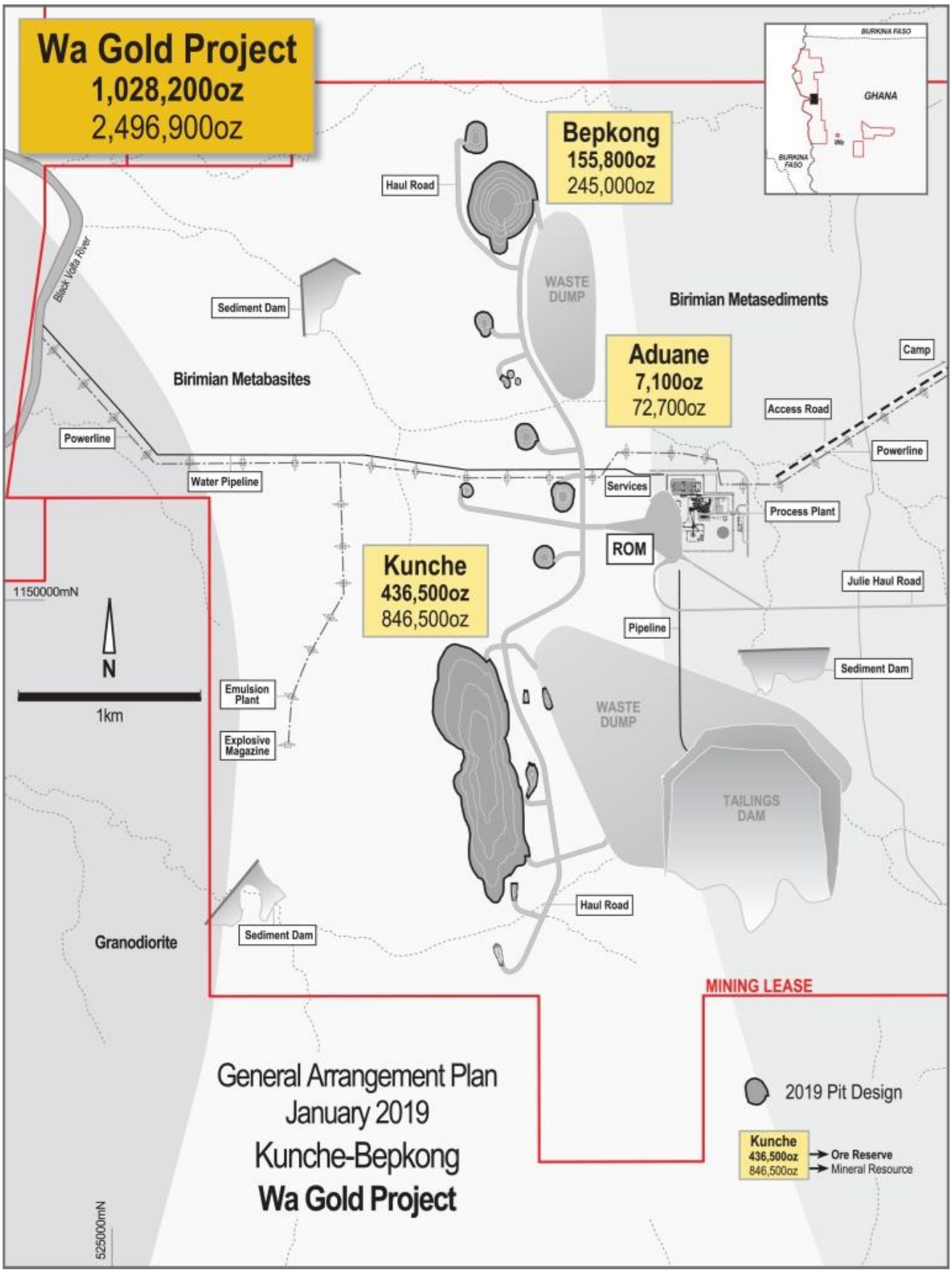
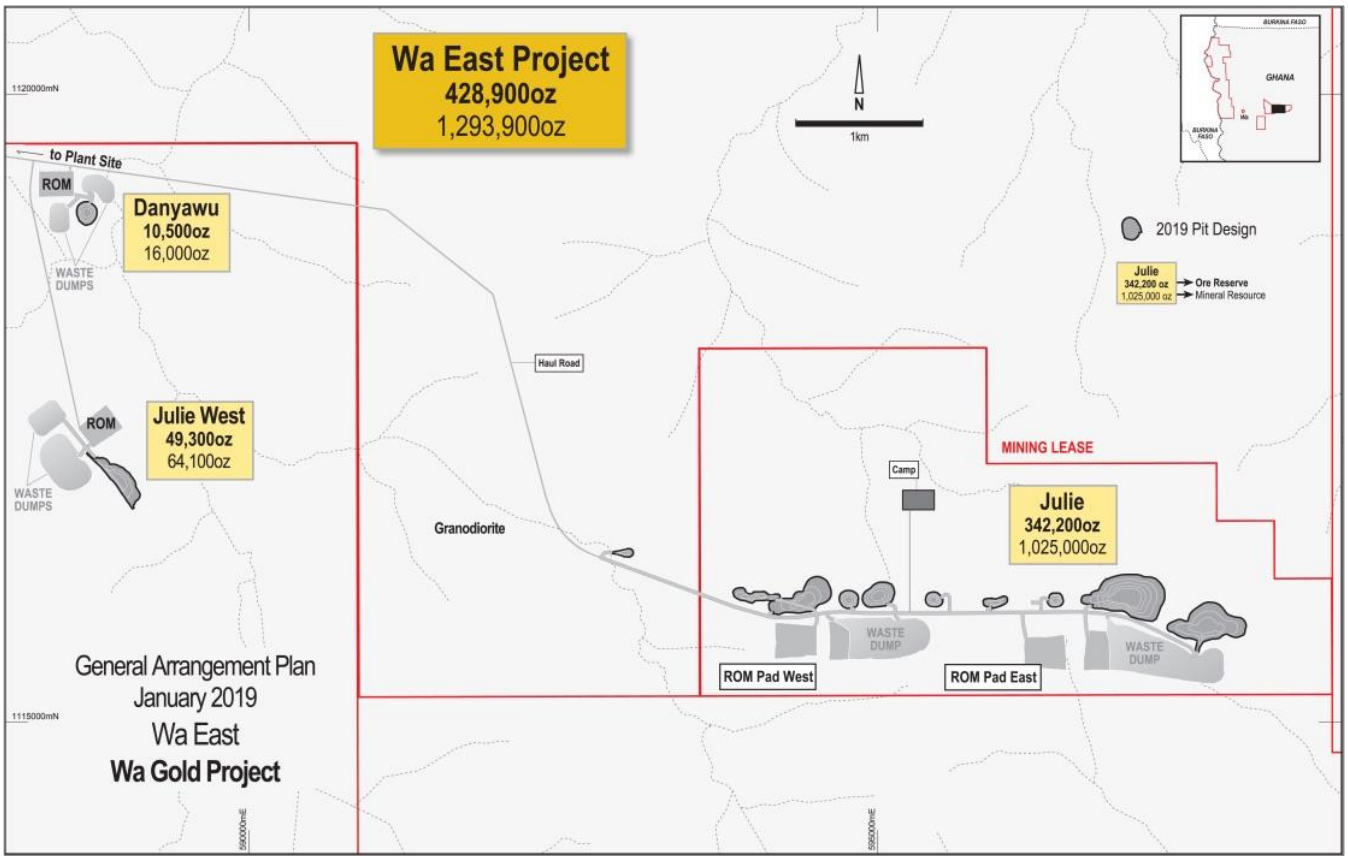


**Fig 3: Wa East deposits and proposed site infrastructure arrangement**




The mining rates are accelerated to complete the mine as soon as possible to minimise mining fixed costs. Hence, ore is stockpiled and all Julie fresh ore is campaigned once there is at least 1 month of Julie fresh ore available at the ROM.

Mine design criteria include minimum mining width, ramp width and gradient, pit exit location and slope design parameters.

The ore production schedule assumes the Kunche region is operated as one mining area and the Julie region as a separate area. The schedule indicates that mining will be split between both areas and operated simultaneously. It is expected all material will be blasted in 5m benches.

Mining of both ore and waste will be undertaken using an excavator (backhoe) to load off-road dump trucks. The ore will be mined in 2.5m flitches to minimise dilution and ore loss.

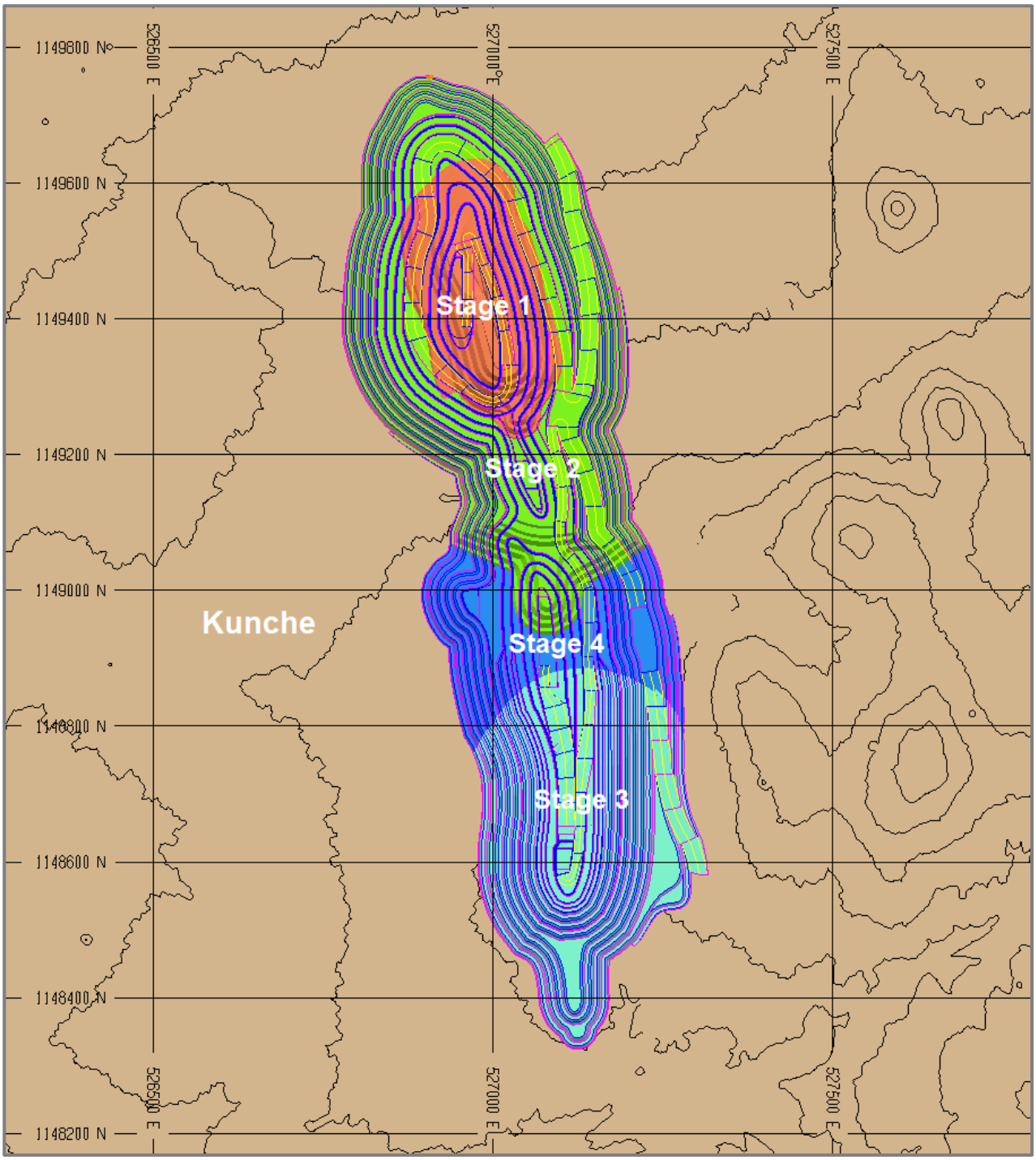
At the Kunche region, ore will be delivered from the pits to a series of ore fingers located on the ROM pad adjacent to the primary crusher. All ore will be either direct tipped or rehandled into the crusher using a front-end loader (FEL). Ore from the Julie region will be delivered to a local ROM pad from where it will be loaded into road trains and transported to the Kunche site.

## Mining schedule

Strategic scheduling was undertaken first to define the mining strategy before development of the detailed production schedule.

The LOM schedule was developed in monthly periods for pre-commissioning and first five years of operation (66 periods) followed by quarterly periods thereafter (8 periods). The monthly periods in the early years of operation allow for a detailed assessment of the ore presentation, bench turnover and blending requirements. Stage release was driven by the strategic schedule results (Table 9).

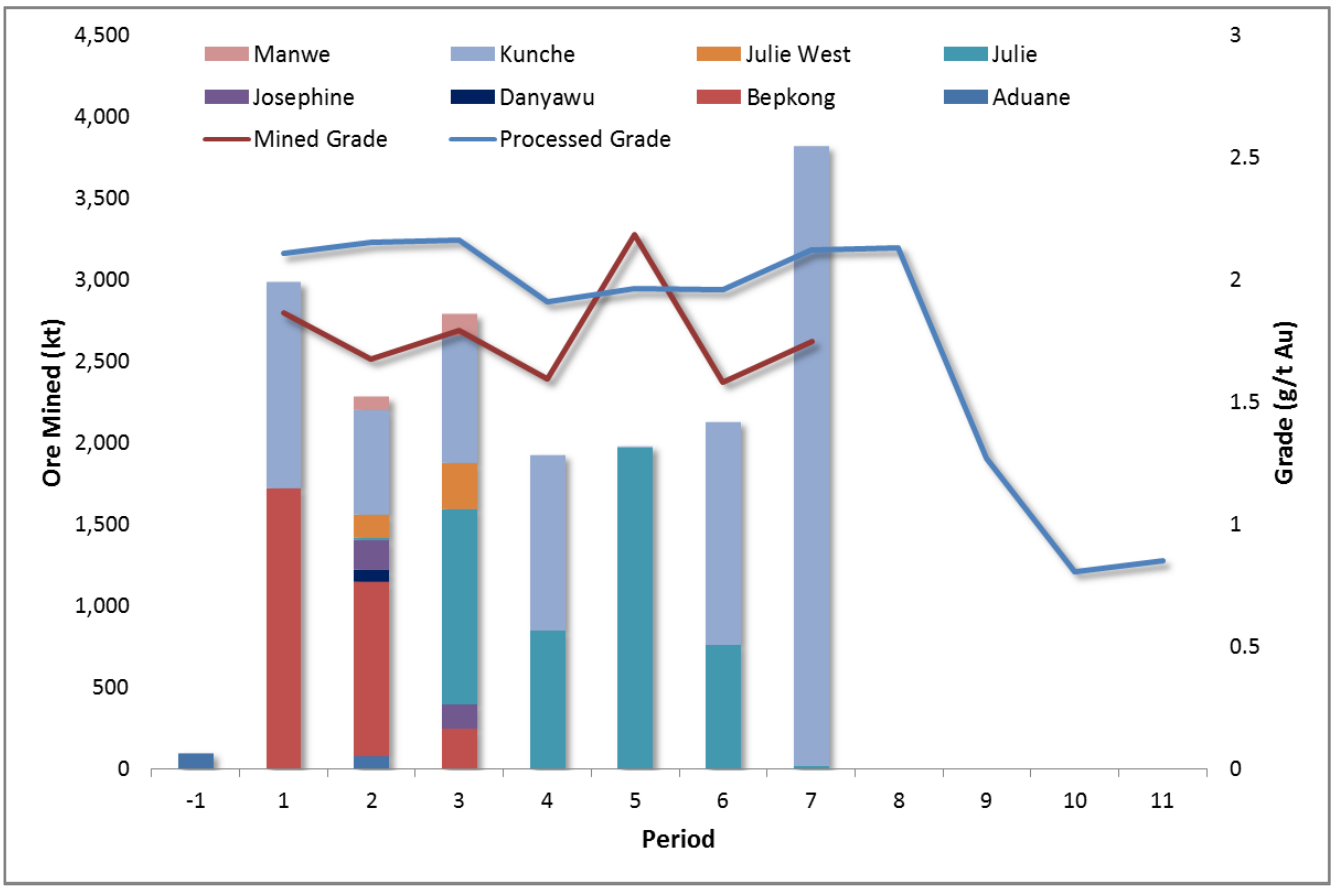
**Fig 4: Kunche pit design showing proposed four mining stages**



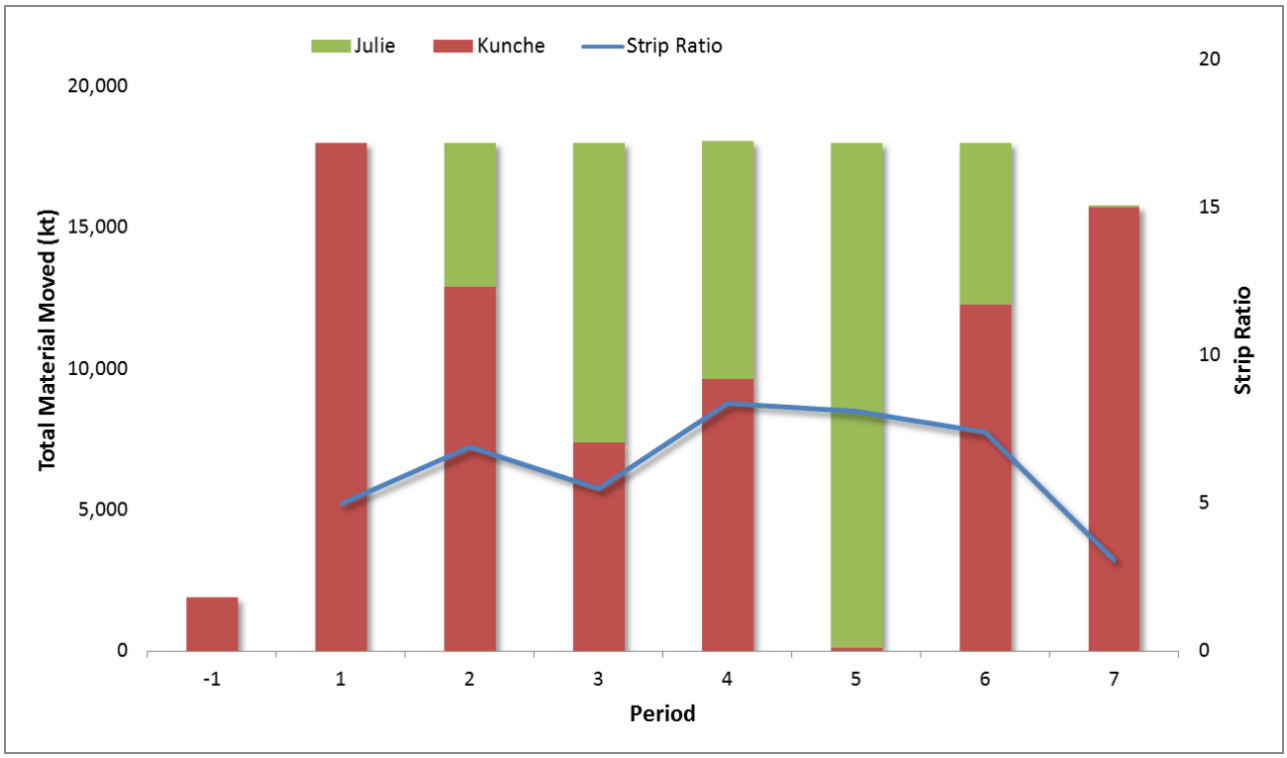
## Table 9: Mining and processing schedule by year

| Year | | Total | Pre | Yr1 | Yr2 | Yr3 | Yr4 | Yr5 | Yr6 | Yr7 | Yr8 | Yr9 | Yr10 | Yr11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MINING** | | | | | | | | | | | | | | |
| Strip Ratio | w:o | 5.98 | 18.24 | 5.03 | 6.88 | 5.45 | 8.35 | 8.08 | 7.44 | 3.13 | | | | |
| Total Mined | kt | 125,741 | 1,895 | 18,004 | 18,005 | 18,005 | 18,054 | 18,005 | 18,002 | 15,769 | | | | |
| Ore Mined | kt | 18,027 | 98 | 2,987 | 2,284 | 2,791 | 1,930 | 1,982 | 2,133 | 3,820 | | | | |
| Grade Mined | g/t Au | 1.77 | 0.98 | 1.86 | 1.68 | 1.79 | 1.60 | 2.19 | 1.58 | 1.75 | | | | |
| **Contained Gold** | **koz Au** | **1,028** | **3** | **179** | **123** | **161** | **99** | **139** | **109** | **215** | | | | |
| **PROCESSING** | | | | | | | | | | | | | | |
| Ore Processed | kt | 18,027 | | 1,868 | 1,771 | 1,830 | 1,826 | 1,745 | 1,632 | 1,315 | 1,299 | 1,521 | 1,628 | 1,592 |
| Grade | g/t Au | 1.77 | | 2.11 | 2.15 | 2.16 | 1.91 | 1.96 | 1.96 | 2.12 | 2.13 | 1.27 | 0.81 | 0.85 |
| Recovery | % | 91.3% | | 93.2% | 92.6% | 91.0% | 91.0% | 90.5% | 90.3% | 89.8% | 89.7% | 90.1% | 90.9% | 90.8% |
| **Gold Recovered** | **Koz Au** | **935** | | **118** | **113** | **116** | **102** | **100** | **93** | **81** | **80** | **56** | **39** | **40** |

## Graph 1: Ore mined, source deposit, mined grade and LOM processed grade



**Graph 2: Total material movement by region with Strip Ratio**




## METALLURGY and PROCESS DESIGN

### Process design, operating and capital costs

Minnovo Pty Ltd (Minnovo) conducted an Engineering Cost Study ("ECS") for Ibaera to update the 2015 DFS (and 2016 update) to an accuracy of ±30% and suitable for use in the updated Ore Reserve estimate undertaken by Orelogy.

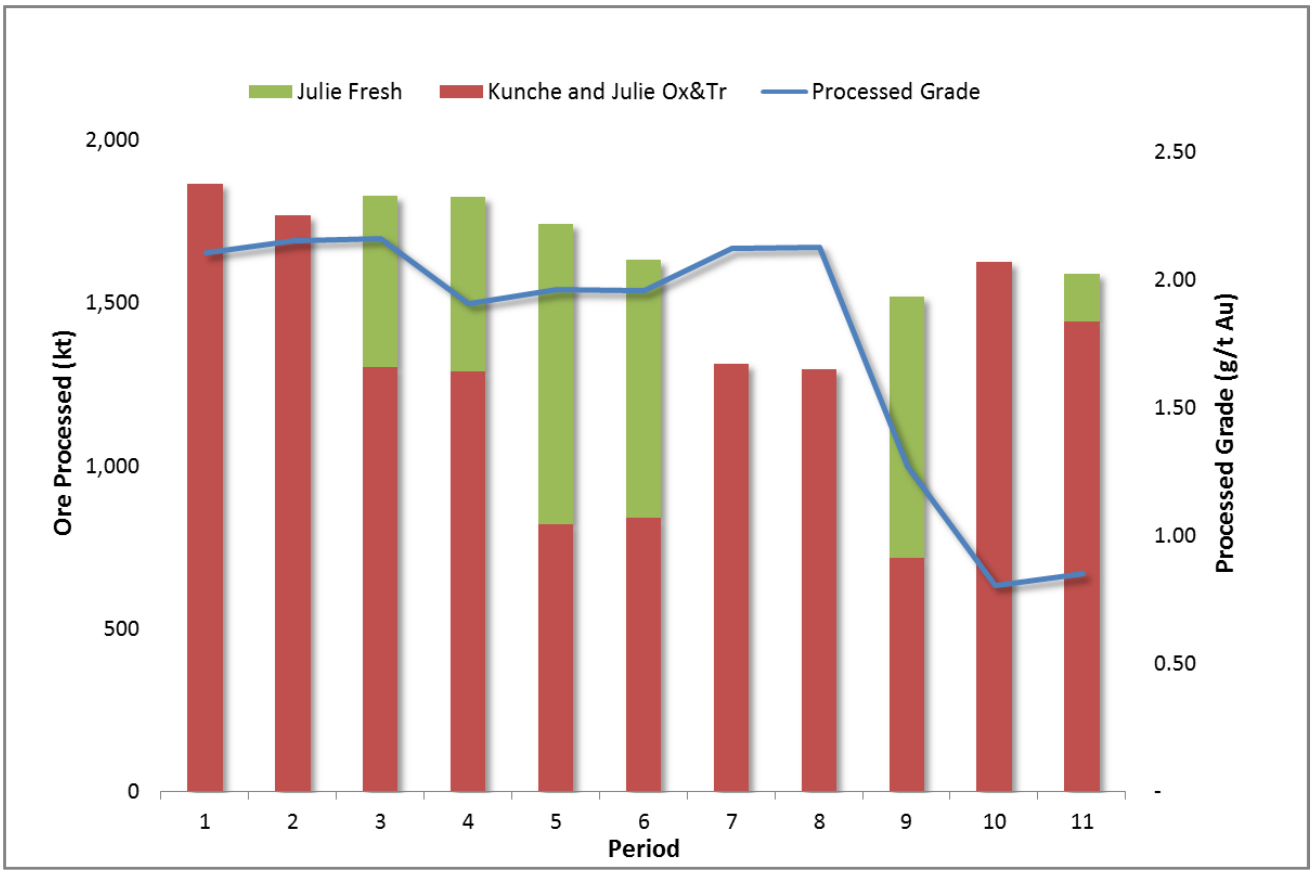
The ECS was based on recent metallurgical testwork results and focused on increasing plant throughput and reducing capital and operating costs where possible. The Study included inputs from Ibaera and other consultants.

Specifically, the Minnovo scope included:

1. Review of testwork and design logic to maximise tonnage for each ore type through the comminution circuit.
2. Review of the 2015 DFS and 2016 Update and updated process design for opportunities found in the testwork review.
3. Review of proposed plant and infrastructure to optimise capital costs.
4. Re-estimation of capital and operating costs to a ±30% accuracy.
5. Benchmark analysis of the updated costs against comparable projects.

NB: The original 2015 DFS was estimated and scoped to an accuracy of ±15%. Further work is required to enable reporting at a ±15% accuracy and to finalise the FSU.

**Graph 3: Ore processed by metallurgical type and processed grade LOM**

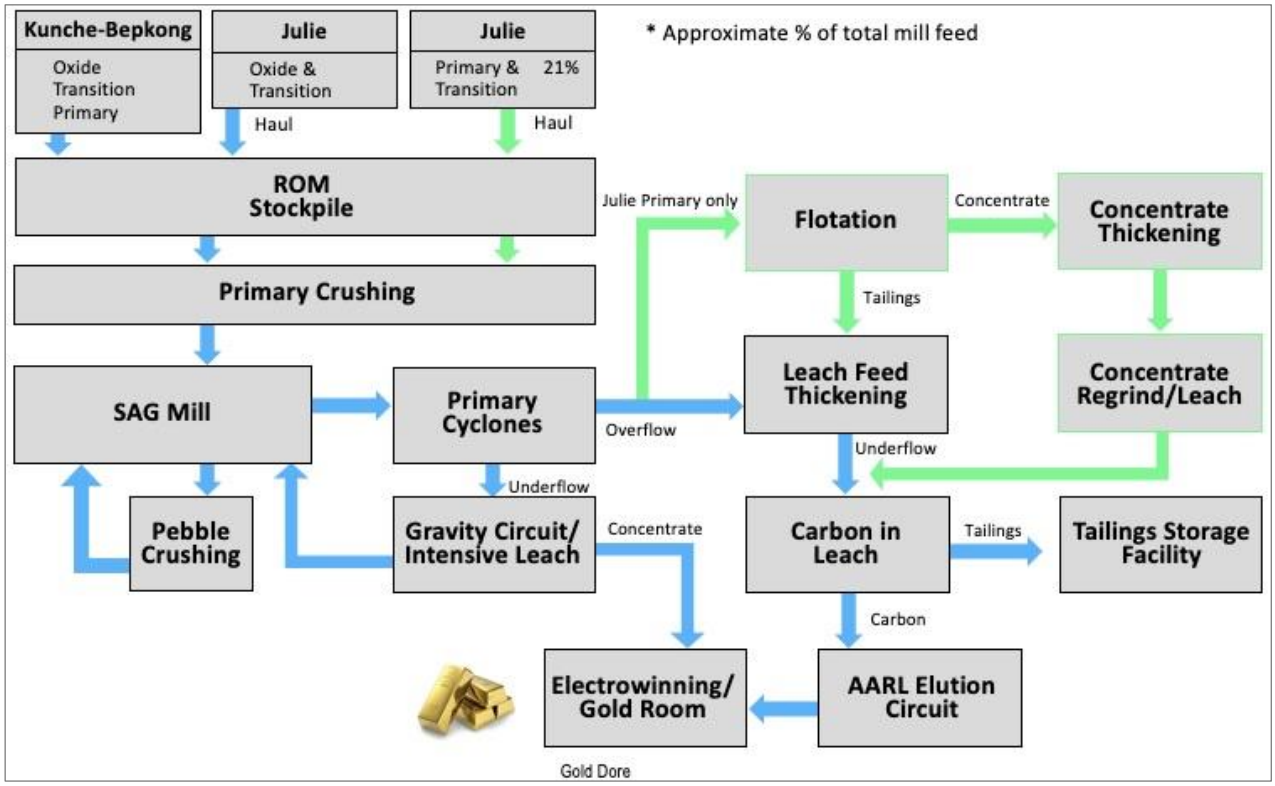



The flowsheet and plant design developed in the previous 2015 DFS Study has been retained in most areas, with a focus on maximising throughput and minimising costs where reasonable (Fig. 5):

- Primary crushing is unchanged from the DFS;
- The comminution equipment selected– namely a single-stage 5.4 MW SAG mill fed by a jaw crusher is unchanged and in-house comminution modelling was undertaken on each individual ore type to allow throughputs for each material to be determined. The comminution parameters used were based on 85th percentile data for oxide material and average values for the remaining ore types. This established a new nameplate throughput of 2.3Mtpa at a grind size P80 of 75 µm;
- The CIL circuit was adjusted to maintain the residence time of 24 hours at the increased 2.3Mtpa throughput by increasing the tanks from 1,350m³ to 1,800m³ each;
- The remaining circuits are the same;
- The use of average comminution data for the harder primary and transition ores was considered suitable as the comminution circuit will be the only constraint when processing these ores; and
- A review of the Kunche Primary testwork identified several samples that were well outside of planned pit shells. Removing these samples from the dataset resulted in an increase in the design recovery from 88.1% to 89.7%.

The metallurgical process proposed is conventional gold extraction by CIL for all Kunche and Bepkong ores and for Julie oxide and some transition ore. Julie primary and remaining transition ores (comprising 21% of the total Ore Reserve) require bulk sulphide flotation with re-grinding of concentrate and intensive leaching of the float tails.

**Fig 5: Simplified process flowsheet**




The key process design basis for the revised process plant design is summarised in Table 10, with throughputs and estimated recoveries for each ore type.

**Table 10: Process design basis for Kunche, Bepkong and Julie deposits**

| Ore Type | | Throughput (Mtpa) |
|---|---|---|
| **Oxide** | Bepkong | 2.30 |
| | Kunche | 2.30 |
| | Julie | 2.08 |
| **Transition** | Bepkong | 2.04 |
| | Kunche | 1.76 |
| | Julie | 1.85 |
| **Primary** | Bepkong | 1.64 |
| | Kunche | 1.28 |
| | Julie | 1.60 |

The key equipment required and comments on how this has changed from the 2015 DFS are summarised in Table 11.

**Table 11: Key process equipment**

| Area | DFS | Minnovo Update | Comment |
|---|---|---|---|
| Crushing | Jaw Crusher | Jaw Crusher | No change |
| Grinding | 5.4 MW SSAG | 5.4 MW SSAG | No change |
| Pebble Crushing | Cone Crusher | Cone Crusher | No change |
| Leach Feed Thickening | 22 m Ø | 22 m Ø | No change |
| Leaching | 6 x 1300 $m^3$ | 6 x 1800 $m^3$ | Increased to maintain residence time |
| Flotation / Regrind / Conc leaching | Rougher 2 x 16 $m^3$<br>Scavenger 4 x 16 $m^3$<br>M1000 Isa Mill<br>5 x 200 $m^3$ tanks | Rougher 2 x 16 $m^3$<br>Scavenger 4 x 16 $m^3$<br>M1000 Isa Mill<br>5 x 200 $m^3$ tanks | No change<br>Deferred until Julie Primary Ore processed |
| Lime Slaking Package | 1 tph | 1 tph | No change<br>Deferred until Julie Primary Ore processed |

Extensive metallurgical testwork has been undertaken on oxide, transition and primary mineralisation domains for the Kunche, Bepkong and Julie

Metallurgical domaining is into oxides, transition and primary mineralisation as defined in the Mineral Resource models (Table 12).

**Table 12: Metallurgical recoveries by key deposit and ore type**

| | Oxide | Transition | Fresh |
|---|---|---|---|
| **Kunche** | 94.3% | 91.1% | 89.7% |
| **Aduane (as per Kunche)** | 94.3% | 91.1% | 89.7% |
| **Bepkong** | 93.3% | 93.3% | 93.0% |
| **Julie Main / Julie West** | 90.8% | 90.8% | 90.0% |
| **Josephine (as per Julie)** | 90.8% | 90.8% | 90.0% |
| **Manwe (as per Julie)** | 90.8% | 90.8% | 90.0% |
| **Danyawu (as per Julie)** | 90.8% | 90.8% | 90.0% |

NB: Due to the similarity in geology and immaterial nature of the minor deposits, the recovery factors of the adjacent main deposits were applied.

NB: There are no deleterious elements

### Processing costs

Minnovo, in conjunction with the Project team, identified a number of improvements achieved by:

- Increasing plant throughput
- Reduction in reagent usage requirements
- Rationalisation of overheads
- The operating cost model has been updated to meet the ±30% criteria:
- Inputs – Updated to reflect increased tonnage for each ore type.
- Elution and ILR batches per week – Updated to reflect increased gold production.
- Consumables – Unit costs updated for consumables. Priority was placed upon specific consumable that have significant impact on the total operating cost.
- Labour – Ghanaian labour adjusted to account for in-country inflation and foreign exchange movement since 2014.
- Power – Installed power updated to reflect the equipment list and average continuous power draw updated for each ore type to reflect throughput.
- Maintenance – Factored estimate of maintenance costs updated to reflect new plant Capital Cost Estimate.

NB: The costs do not include the recent change to Get Fund/NHIL rebate status.

NB: Julie Primary Operating Cost includes Flotation and Intensive Leaching of Concentrate

**Table 13: Summary of process operating costs**

| Life of mine average 1.64 Mt/y | US$/t |
|---|---|
| Operating consumables | 6.27 |
| Maintenance materials | 0.89 |
| Process and maintenance labour | 1.11 |
| Power | 4.05 |
| Laboratory | 0.42 |
| **Process operating cost** | **12.75** |
| Administration labour | 1.26 |
| General & administration | 1.20 |
| **Administration cost** | 2.45 |
| **Total operating cost** | **15.20** |

Improvements to the operating costs were achieved by

- Increasing plant throughput
- Reduction in reagent usage requirements
- Rationalisation of overheads

## MINING COSTS

### Mining costs

The total operating costs for the LOM were determined. The direct mining cost to win the ore and place it on the ROM pad totals US$351.4M which equates to US$2.94/t of total material.

Total Julie ore handling costs are US$84.9M which equates to US$15.97/t ore. Overall ore handling costs are higher with the inclusion of the road-train haulage from the Julie region.

Overall total "life-of-mine" mining costs are US$2.94/t mined, or US$3.59/t mined if all costs related to the road haulage from Julie to Kunche are also included. These costs exclude capitalised pre-production or sustaining capital.

Fuel and explosives costs have been derived separately and costed from first principles. The fuel price of US$1.005/litre is based on current oil prices.

Mining contractor costs were determined through a Request for Budget Pricing (RFBP) process on the basis of preliminary optimisation and scheduling work undertaken in September 2018. The RFBP was divided into a Mining Contract and a separate haul road construction and road haulage contract. The basis for the two contracts was to elicit the best price for each activity. A shadow bid was produced in parallel with the RFBP as a benchmark for the contractor evaluation. Bids were received from 4 contract mining organisations.

## CAPITAL COSTS

The capital cost estimate is based upon adjustment of the detailed 2016 DFS update estimate and has been updated to meet the ±30% criteria (Table 14).

**Table 14: Summary of Establishment Capital costs**

| Capital Cost (+/-30%) | |
|---|---|
| Area | US$(M) |
| Mining | 11.5 |
| Civils and Earthworks | 8.9 |
| Process Plant | 39.8 |
| Non-Process Infrastructure | 6.5 |
| EPCM | 10.9 |
| Start-up | 3.5 |
| P&G Mob and Demob | 6.3 |
| Owners Pre-production Costs | 9.3 |
| **Sub-total** | **96.7** |
| Contingency | 9.6 |
| Taxes (mainly VAT) | 10.6 |
| **Total** | **117.0** |

In addition to the Establishment Capital cost, sustaining capital of US$18.7 and deferred capital of US$19.9M will be incurred. The latter is primarily associated with the installation of the Julie ore flotation circuit and haul road.

### Capital Cost variations

In regards to the variations from the 2015 DFS and 2016 DFS Update, the following is noted:

1. Mining capitalised pre-production has been reduced.
2. Non-process infrastructure has been rationalised and tailored to the site location.
3. Power infrastructure and other capital items are to be outsourced to contract providers.
4. The DFS contingency has been increased from 6.5% to 10% to take into account the review activities undertaken by the Project team.
5. The capital includes all relevant import and value added taxes.

### Further Capital Cost reduction opportunities

In addition to the revised capital cost estimate, further opportunities that could be pursued were identified. However, the assessment of these opportunities has not been completed and any reduction is not yet realised.

## FINANCIAL MODELLING and ECONOMIC ANALYSIS

As at the date of this release, the FSU is incomplete. It is scheduled to be completed in Q3 2019.

The FSU has selectively updated the 2015 DFS Project Financial Model ("PFM") to reflect the outputs from the various advancing components of the FSU (as summarised above) and to enable the reporting of the Ore Reserve. This work has been undertaken by Model Answers Pty Ltd.

The scope of this work specifically does not at this stage extend to taxation and all financials reported from the PFM are pre-tax (other than for VAT) and post the current Ghana government royalty of 5%.

The PFM has also not modelled project financing as might occur through the expected joint venture ownership structure, once Ibaera is assumed to have earned its direct equity interest in the Project.

The PFM is also silent at present on a range of fiscal matters (other than the 5% royalty) that will impact on how these are to be represented in the financial model. AZG is discussing these and the possibility of a fiscal stability agreement with the Government of Ghana.

As the FSU is incomplete, all financial information presented is preliminary in nature.

### Financial Summary

The pre-tax Project Net Cash Flow, $NPV_{5\%}$ and IRR are US$270M, US$176.6M and 35.3% respectively (US$1,300/oz gold realisation price) and based on 100% Project equity financing i.e. no interest, debt facility or debt facility related costs.

Pits were optimised using a gold price of $1,300 per oz and a Revenue Factor of 1 was applied (refer also to Table 2 'Modifying Factors").

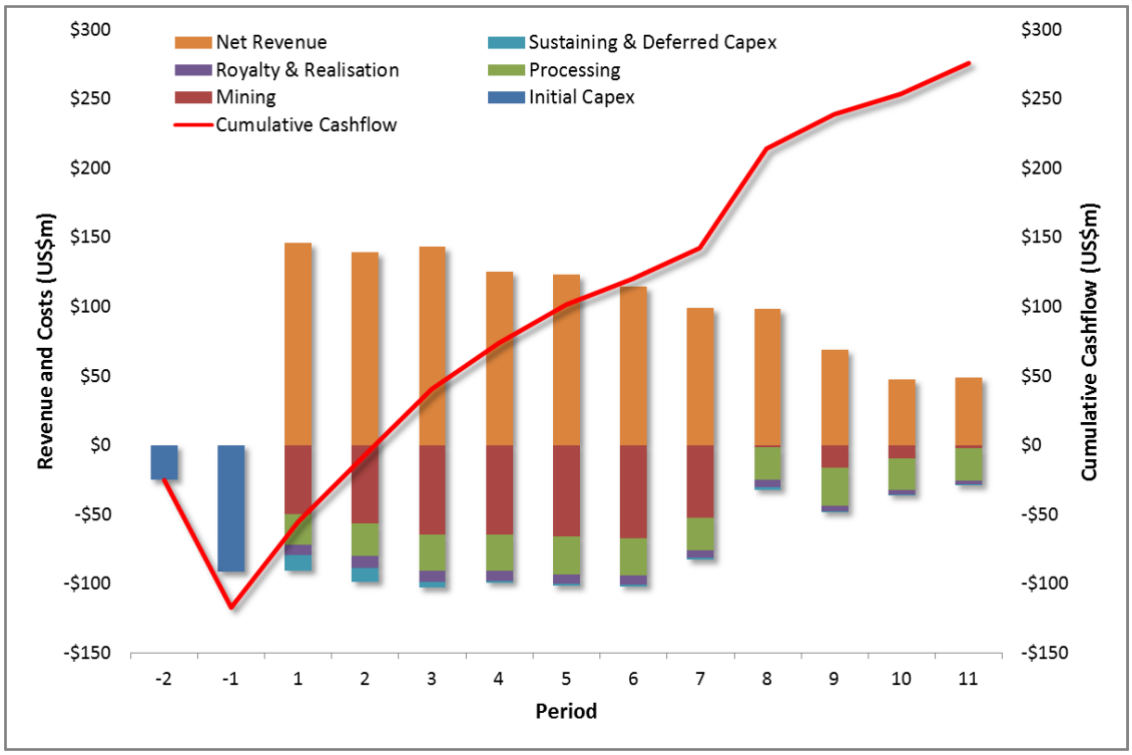
All revenues are based on US dollars and up-to-date exchange rates have also been used where necessary (USD:AUD 0.75).

The financial summary demonstrates a positive result.

Sensitivities and discounting ranges have been applied to understand the economic tolerance to various key inputs to the base case. The sensitivities are ±20%.

The $NPV_{5\%}$ remains positive within the full range of assessed tolerances and the Project demonstrates a positive economic case and profit margin to support the development of the Project.

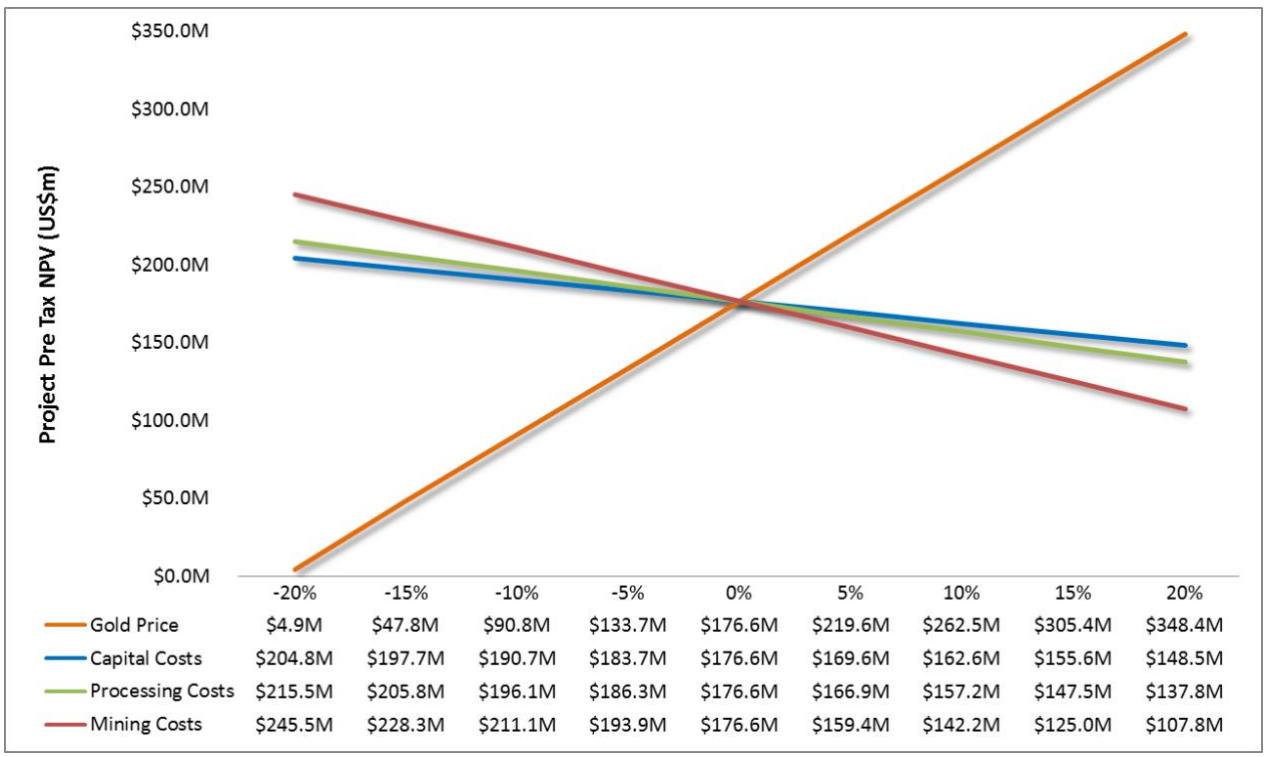
**Graph 4: Cash Flow summary**




## Sensitivity

Sensitivity analysis at a range of -20% to +20% has been performed on a series of key inputs. The Project NPV is most sensitive to gold price and after that contract mining costs (Graph 5).

**Graph 5: NPV sensitivity**




| | -20% | -15% | -10% | -5% | 0% | 5% | 10% | 15% | 20% |
|---|---|---|---|---|---|---|---|---|---|
| Gold Price | $4.9M | $47.8M | $90.8M | $133.7M | $176.6M | $219.6M | $262.5M | $305.4M | $348.4M |
| Capital Costs | $204.8M | $197.7M | $190.7M | $183.7M | $176.6M | $169.6M | $162.6M | $155.6M | $148.5M |
| Processing Costs | $215.5M | $205.8M | $196.1M | $186.3M | $176.6M | $166.9M | $157.2M | $147.5M | $137.8M |
| Mining Costs | $245.5M | $228.3M | $211.1M | $193.9M | $176.6M | $159.4M | $142.2M | $125.0M | $107.8M |

## OTHER FACTORS

### Mining Leases

The Project is owned 100% by Azumah through its wholly owned Ghana domiciled subsidiary, Azumah Resources Ghana limited ("AZG").

AZG holds a 15-year mining lease encompassing the Kunche, Bepkong and Aduane deposits (ML10/1). The Julie deposit is situated on a separate 15-year mining lease (ML10/5) held through Phoenix Resources Ltd, a wholly owned subsidiary of AZG.

Now that there has been estimated Ore Reserves for the Julie West, Manwe, Josephine and Danyawu deposits a mining lease(s) will be applied to encompass these deposits which account for 86,700oz (8%) of the total Ore Reserve.

### Environmental

A detailed social and environmental assessment, leading to a formal Environmental Impact Assessment (EIA) has been completed by SAL Consult of Ghana and Azumah personnel. Site based public forums were arranged by the Environmental Protection Agency of Ghana ("EPA") and held in late 2017.

The EIA was submitted in late 2017/early 2018 and no objections have been raised by stakeholders to date. The process for the issue of EPA operating permits is considered well advanced.

This process has also included, but has not been limited to, the following base line studies:

- Socio-Economic
- Archaeological and Heritage
- Noise
- Air Quality
- Hydrological
- Hydrogeological
- Fauna and Flora
- Freshwater Ecology
- Public Health

All likely environmental and social impacts associated with the Project have been identified and assessed and no issue has been identified that cannot be mitigated or managed to an acceptable degree.

Waste rock geochemistry investigations have been undertaken by Knight Piesold and testing of waste rock samples from the Kunche, Bepkong and Julie deposits indicates that none of the waste rock samples tested is acid generating, with the majority of samples being non-acid generating with a high degree of excess neutralising capacity. Management of surface run-off and seepage from the waste dumps and pit walls during operation is required and final waste dumps will be capped with suitable materials to minimise water infiltration.

No communities are required to be relocated to enable operations to proceed.

### Social

Site analysis and census surveys have confirmed the Mining Lease areas will not require the resettlement of any villages.

Azumah will make compensation payments to all affected farmers in accordance with Ghana law and in consultation with local administrators and will encourage them to continue their farming activities on land not directly required by the Project.

Consultation with key stakeholders and all residents and focus group discussions continue in an effort to keep all groups informed. Information on the Project and potential impacts are distributed to stakeholders both locally and nationally.

The Project will require the relocation of a number of sacred shrines and burial sites. None of the sites are considered to be of national or international significance and, with respect to local customary practices and the implementation of traditional practices, these can be relocated.

The Project has wide-ranging local and national support and will create a large number of jobs and enhancement of local and regional skills. There is no other major industry in the region.

### Market assessment

The 2016 DFS Update was developed using a gold price of US$1,300/oz and, for consistency, this FSU has adopted the same price. It is noted that the gold price has varied since 2016 from $1,250/oz to $1,350/oz.

There has been no formal assessment or forecast of the gold price.

### Risks

There are no obvious or likely naturally occurring risks identified that may negatively impact the Project or Project area.

There are no material legal or marketing agreements.

All statutory government agreements, permits and approvals commensurate to the current status of the project are current and in good order.

### Operating Environment

Ghana's Upper West region is only moderately populated, has no major industry and generally relies on subsistence farming. The Project is likely to bring many benefits to the area.

Ghana has a long tradition of gold mining and is now Africa's second largest gold producer with several World-class gold mines in operation. These are supported by a myriad of mining services and facilities available in-country and a well-trained and educated workforce. Ghana is ranked as one of the World's fastest growing economies. Ghana has a long history of stable government and peaceful transitions to new democratically elected governments operating under the Westminster system.

## PROJECT UPSIDE

The Project is considered to have considerable upside over and above the current Ore Reserves and the preliminary FSU based Project economics now being reported:

### Finalisation of FSU

The FSU is well advanced. A large number of technical elements have been finalised and will not change. However, there are a number of areas identified in the FSU as it now stands that offer opportunities to improve the operational and economic performance of the Project. These will be considered in more detail prior to the completion of the FSU, scheduled for Q3 2019.

### Inferred Mineral Resources

Only Measured and Indicated material were categorised as ore for the optimisation process. No Inferred Mineral Resources have been included in the Ore Reserves or the associated production schedule. However, there is 34,800oz of Inferred material inside the current pit designs which are not included and are currently defined as waste. Also, pit optimisation studies using Inferred material has highlighted that there is ~156,000oz of Inferred material within the optimised pit shells when Inferred material has been included as a sensitivity. Work is planned to elevate as much of this material as possible to Measured and Indicated status so that it is then eligible to be considered for Ore Reserves.

Note: The Inferred material for the mine design and for the pit optimisation sensitivity option is not additive. Subject to drilling and results, this provides an opportunity to increase Ore Reserves. However, by definition, there is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration and other work will result in their determination as either Measured or Indicated Mineral Resources that would enable the current Inferred material to be eligible for consideration as Ore Reserves.

## Underground mining

Recent drilling below the base of the current designed open pits at Kunche and Bepkong has highlighted the extension and/or presence of high-grade material to well below the extent of existing Mineral Resources and Ore Reserves. It is not yet known to what depth this mineralisation may extend (Bepkong: ASX releases 12 and 19 December 2018. Kunche: ASX releases 8 May 2018 and 10 January 2019).

Subject to further drilling and technical and economic evaluation, the possibility of extending mining underground to access and to profitably mine this material is an emerging possibility that could add material value to the Project as now presented. No formal studies have commenced.

Drilling continues to provide more information on the extent and nature of this deeper mineralisation and results will be reported as they arise, including those from six deep holes being drilled at Bepkong.

## Exploration

A 40,000m, A$4 million multi-target drilling campaign is underway aimed at lifting Mineral Resources and ultimately Ore Reserves at the Project by extending existing Ore Deposits, upgrading Mineral Resources, investigating recent discoveries and by making discoveries within the large array of robust geochemical anomalies identified throughout the 2,400km$^2$ of highly prospective Project tenure (Fig 1)(ASX release 12 November 2018).

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## About Azumah Resources Limited

Azumah Resources Limited is a Perth-based, ASX-listed (ASX: AZM) company focused on exploring and developing its regional-scale Wa Gold Project in the Upper West Region of Ghana, West Africa.

Three main deposits have been discovered and extensively drilled at Kunche and Bepkong, adjacent to the Black Volta River and Ghana's border with Burkina Faso, and Julie approximately 80km to the east.

Several satellite deposits including Aduane, Kunche Northwest, Yagha, Julie West, Danyawu, Alpha/Bravo, Josephine and Collette have also been discovered and delineated.

To date, the Company has estimated a JORC 2012 Mineral Resource of 2.5Moz of gold grading 1.6g/t Au, including 1.6Moz Measured and Indicated grading 1.8g/t Au. These are evenly distributed between the Kunche-Bepkong and Wa East (Julie deposit etc.) camps.

In January 2019, an Ore Reserve estimate of 1,028,000oz (18Mt at 1.77g/t Au)(JORC 2012) was reported. A 2015 Feasibility Study, and a 2016 capital costs update to that, is being updated with finalisation scheduled for Q3 2019.

Extensive metallurgical test work has confirmed a high average overall gold recovery of ~92% for the combined Kunche, Bepkong and Julie deposits.

Mineral Resources have been progressively grown through a focused, systematic approach to the exploration of the Company's 2,400km$^2$ licence holdings. These encompass large tracts of prospective Birimian terrain, the rocks that host the majority of West Africa's gold mines.

Much of the tenure is covered in soil, alluvium or laterite, so most discoveries have been 'blind'. Azumah anticipates Mineral Resources will substantially grow as it continues to generate and test its extensive pipeline of targets.

Azumah's current exploration strategy is driven by its aim to materially increase its existing Ore Reserve base and demonstrate attractive Project economics. This will enhance funding capability and solidly underpin a development decision.

Azumah has two 15-year Mining Leases over its principal deposits (Ghana government holds a 10% free carried interest in their 'rights and obligations' and is also entitled to a 5% gross gold royalty).

No technical, social or environmental impediments to development have been identified, no communities need to be relocated and rehoused, and there is strong support from key stakeholders for the Project.

The Project benefits from excellent regional infrastructure including grid power to site; good quality bituminised and non-bituminised roads, easy access to water, a 2km sealed airstrip at the regional centre of Wa and good general communications.

### Ibaera Funding Transaction

All of Azumah's Ghana interests are held through its wholly owned Ghana subsidiary, Azumah Resources Ghana Limited (AZG).

On 1 September 2017 Azumah executed a transformative Earn-In and Shareholders Agreement (EISA) with Perth managed private equity group, Ibaera Capital GP Limited (Ibaera), whereby Ibaera can initially earn a 42.5% interest in AZG, and therefore the Wa Gold Project, by spending US$11.5M over two years.

If Azumah elects not to co-contribute pro-rata after that, Ibaera may increase its interest to a maximum of 47.5% for a total minimum expenditure of US$13.5 million (~A$17M).

Ibaera is backed by a US-based +US$1.5 billion natural resources focused investment fund. Before committing to the Project, Ibaera reviewed many other international resource projects and, having selected the Azumah Project, undertook comprehensive due diligence before committing to the EISA.

The terms of the EISA set out the basis for the parties to boost Mineral Resources, Ore Reserves and to deliver a feasibility level study supporting a decision to proceed to production (refer ASX release dated 2 September 2017).

Ibaera's owners, principals and management are all very experienced geologists, engineers and financiers and, pursuant to the EISA, are now managing all facets of the Project.

**Table A: Ore Reserves Summary – JORC Code 2012 – January 2019**

| | Proved | | | Probable | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|
| (As at January 2019) | Tonnes (Mt) | Grade g/t Au | Gold oz | Tonnes (Mt) | Grade g/t Au | Gold Oz | Tonnes (Mt) | Grade g/t Au | Gold oz |
| **Kunche** | 8.0 | 1.51 | 388,600 | 0.9 | 1.65 | 47,900 | 8.9 | 1.52 | 436,500 |
| **Bepkong** | 2.4 | 1.65 | 124,400 | 0.7 | 1.41 | 31,300 | 3.0 | 1.59 | 155,800 |
| **Aduane** | | | | 0.2 | 1.11 | 7,100 | 0.2 | 1.11 | 7,100 |
| **Julie** | 1.2 | 2.11 | 83,600 | 3.6 | 2.24 | 258,600 | 4.8 | 2.21 | 342,200 |
| **Julie West** | | | | 0.4 | 3.59 | 49,300 | 0.4 | 3.59 | 49,300 |
| **Danyawu** | | | | 0.1 | 4.63 | 10,500 | 0.1 | 4.63 | 10,500 |
| **Josephine** | | | | 0.3 | 1.29 | 13,800 | 0.3 | 1.29 | 13,800 |
| **Manwe** | | | | 0.2 | 1.91 | 13,100 | 0.2 | 1.91 | 13,100 |
| **Total** | **11.6** | **1.60** | **596,700** | **6.4** | **2.09** | **431,500** | **18.0** | **1.77** | **1,028,200** |

Values have been rounded.

## Table B: Mineral Resource Estimate – JORC Code 2012 – Updated September 2018

| | | Measured | | | Indicated | | | Measured + Indicated | | | Inferred | | | Grand Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Deposit** | **Cutoff Au g/t** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** | **Tonnes (Kt)** | **Au g/t** | **Ounces** |
| | **Wa-Lawra:** | | | | | | | | | | | | | | | |
| **Kunche** | 0.5 | 8,835 | 1.6 | 446,000 | 3,404 | 1.3 | 145,000 | 12,239 | 1.5 | 591,000 | 7,616 | 1.0 | 255,700 | 19,855 | 1.3 | **846,500** |
| **Bepkong**** | 0.5 | 2,220 | 1.8 | 128,000 | 1,700 | 1.3 | 73,000 | 3,920 | 1.6 | 201,000 | 1,170 | 1.2 | 44,000 | 5,090 | 1.5 | **245,000** |
| **Aduane** | 0.5 | | | | 322 | 1.2 | 12,800 | 322 | 1.2 | 12,800 | 1,491 | 1.3 | 59,900 | 1,812 | 1.3 | **72,700** |
| **Kunche NW** | 0.5 | | | | | | | | | | 694 | 1.1 | 25,400 | 694 | 1.1 | **25,400** |
| **Yagha** | 0.5 | | | | | | | | | | 333 | 1.3 | 13,400 | 333 | 1.3 | **13,400** |
| | **Wa East:** | | | | | | | | | | | | | | | |
| **Julie*** | 0.5 | 1,490 | 2.1 | 101,000 | 9,300 | 1.9 | 572,100 | 10,790 | 1.9 | 673,000 | 6,360 | 1.7 | 352,000 | 17,150 | 1.9 | **1,025,000** |
| **Collette**** | 0.5 | | | | | | | | | | 1,690 | 1.5 | 79,000 | 1,690 | 1.5 | **79,000** |
| **Julie West** | 1.0 | | | | 455 | 4.0 | 58,900 | 455 | 4.0 | 58,900 | 68 | 2.4 | 5,100 | 523 | 3.8 | **64,100** |
| **Danyawu** | 1.0 | | | | 105 | 4.2 | 14,200 | 105 | 4.2 | 14,200 | 38 | 1.5 | 1,800 | 143 | 3.5 | **16,000** |
| **Alpha/Bravo** | 1.0 | | | | | | | | | | 148 | 4.2 | 20,000 | 148 | 4.2 | **20,000** |
| **Josephine** | 1.0 | | | | 709 | 1.5 | 34,500 | 709 | 1.5 | 34,500 | 580 | 1.5 | 28,600 | 1,290 | 1.5 | **63,100** |
| **Manwe** | 1.0 | | | | 257 | 2.1 | 17,300 | 257 | 2.1 | 17,300 | 192 | 1.5 | 9,400 | 450 | 1.9 | **26,700** |
| | | | | | | | | | | | | | | | | |
| **Total** | | **12,545** | **1.7** | **675,000** | **16,252** | **1.8** | **927,800** | **28,797** | **1.8** | **1,602,700** | **20,380** | **1.4** | **894,300** | **49,178** | **1.6** | **2,496,900** |

Note: Values have been rounded. A lower cut-off of 0.5g/t Au was used for Kunche, Bepkong, Aduane, Julie and Collette, and a lower cut-off of 1.0g/t Au was used for Julie West and Danyawu

## 'Competent Persons' Statements

The information in this announcement that relates to Mineral Resources for the Julie, Kunche, Aduane, Kunche NW, Yagha, Julie West, Danyawu, Alpha/Bravo, Josephine and Manwe deposits is extracted from the Company's ASX announcement dated 28 September 2018 and is available to view on the Company's website. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original announcement, that all material assumptions and technical parameters underpinning the estimates in the original announcement continue to apply and have not materially changed and that the form and context in which the Competent Person's findings are presented have not been materially altered.

The information in this announcement that relates to Mineral Resources for the Bepkong and Collette deposits is extracted from the Company's ASX announcement dated 2 September 2014 and is available to view on the Company's website. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original announcement, that all material assumptions and technical parameters underpinning the estimates in the original announcement continue to apply and have not materially changed and that the form and context in which the Competent Person's findings are presented have not been materially altered.

The information in this announcement that relates to an Ore Reserves estimate for the Kunche, Bepkong, Aduane, Julie, Julie West, Danyawu, Josephine and Manwe deposits is based on and fairly reflects information and supporting documentation prepared by Mr Steve Craig, a Competent Person, who is an employee of Orelogy Consulting Pty Ltd and a Fellow member of the AusIMM (#112346). Mr Craig has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Persons as defined in the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Craig has given his prior written consent to the form and context in which the Ore Reserves and supporting information are presented in this report.

Statements of Competent Persons for the various Mineral Resource Estimates, Ore Reserve Estimates and Process Metallurgy, can all be found on the Company's website at: http://www.azumahresource.com.au/projects-competent_persons.php

## Forward-Looking Statement

All statements other than statements of historical fact included in this document including, without limitation, statements regarding plans and objectives of Azumah, are forward-looking statements. Forward-looking statements can be identified by words such as 'anticipate", "believe", "could", "estimate", "expect", "future", "intend", "may", "opportunity", "plan", "potential", "project", "seek", "will" and other similar words that involve risks and uncertainties. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions regarding future events and actions that are expected to take place. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company, its directors and management of Azumah that could cause Azumah's actual results to differ materially from the results expressed or anticipated in these statements.

The Company cannot and does not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained on this website will occur and investors are cautioned not to place any reliance on these forward-looking statements. Azumah does not undertake to update or revise forward-looking statements, or to publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained on this website, except where required by applicable law and stock exchange listing requirements.

Statements of Competent Persons for the various Mineral Resource Estimates, Ore Reserve Estimates and Process Metallurgy can all be found on the Company's website at: http://www.azumahresource.com.au/projects-competent_persons.php

## Appendix: *Wa Gold Project - JORC Code 2012 Edition – Table 1*

### *Section 1 Sampling Techniques and Data*

(Criteria in this section apply to all succeeding sections.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| Sampling techniques | Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling. | The Wa Gold Project (Project) prospects (Kunche, Bepkong, Aduane, Julie, Collette, Julie West, Danyawu, Alpha/Bravo, Josephine, Manwe, Kunche NW and Yagha) were sampled using surface trenching and drilling. Drilling methods include diamond (DD), reverse circulation (RC), rotary air-blast (RAB) and air-core (AC). RAB and AC drilling data have not been used to estimate the Mineral Resources. Surface trenching has not been used to estimate Mineral Resources.<br>**Kunche:** 980 holes were drilled for a total of 91,680m. This includes 15 DD holes for 1,945m, 614 RC holes for 59,939m and 86 RCDD holes for 18,792m. Holes were drilled at dips between -50° and -90°. 54 trenches were also excavated totaling 2,766m in length.<br>**Bepkong:** 248 holes were drilled for a total of 27,158m. This includes 6 DD holes for 894m, 211 RC holes for 19,938m and 31 RCDD holes for 6,326m. The majority of holes are drilled grid west at -50° to intersect the steeply west dipping/vertical mineralisation at high angles.<br>**Aduane:** 622 holes were drilled for a total of 54,520m. This includes 45,211m (455holes) of RC drilling, 6,704m (149 holes) of AC drilling, 3,248m (73 holes) of RAB drilling, 2254m (12 holes) of RCDD drilling and 352m (6 holes) of DD drilling. The majority of the holes were drilled towards the west with dips varying between -30° and -57°. There is one trench 78m in length.<br>**Julie:** 916 holes were drilled for a total of 70,130.5m. This includes 43 DD holes for 1895.4m, 841 RC holes for 62,455m |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | and 32 RCDD holes for 5780.1m. The majority of the holes were drilled at dips between -45° and -60° with only 28 holes drilled with an inclination greater than -60°. 33 trenches were excavated totaling 2,557m in length.<br>**Collette:** 544 holes were drilled for a total of 22,530m. All holes were RC. Hole dips varied between -35° and -60°. 10 trenches were excavated totaling approximately 500m in length.<br>**Julie West:** 96 holes were drilled for a total of 5566m. 90 holes were RC for 5471 m and 6 RAB holes for 95m. Hole dips ranges from -60° to -90°. Average RC depth was 60m<br>**Danyawu:** 53 holes were drilled for a total of 3956m with all holes drilled RC. Hole dips ranges from -50° to -90°. Average RC depth was 74m.<br>**Alpha/Bravo:** 89 holes were drilled for a total of 2999m. 63 holes were RAB for 1512 m and 26 holes were RC for 1487m. Hole dips ranges from -50° to -70°. Average RC depth was 57m.<br>**Josephine:** 67 holes were drilled for a total of 5295m. 63 holes were RC for 4990 m and 4 holes were DD for 305. Hole dips ranges from -50° to -90°. Average RC depth was 79m.<br>**Manwe:** 24 holes were drilled for a total of 2087m. All holes were RC. Hole dips ranges from -50° to -70°, with azimuths ranging from 230° to 270°. Average RC depth was 86m.<br>**Kunche NW:** 20 holes were drilled for a total of 1377m. 17 holes were RC for 1312 m and 3 holes were RC for 65m. Hole dips ranges from -50° to -70°, with all drilling at an azimuth of 270°. Average RC depth was 77m.<br>**Yagha:** 22 holes were drilled for a total of 1513m. 14 holes were RC for 1163 m and 8 holes were RAB for 65m. Hole dips ranges from -50° to -70°, with all drilling at an azimuth of 270°. Average RC depth was 77m. |
| | Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. | RC sampling was carried out at 1m intervals and samples composited to 4m. Anomalous RC composite results were re-assayed at 1m intervals. RC samples were collected at 1m intervals. RC sample weights averaged 20 kg in oxide material and 30 kg in fresh material. DD samples were taken at 0.5–1.1m intervals. The sample quality and recovery of DD core from fresh and oxidised rock was good. Appropriate quality assurance/quality control (QAQC) protocols were followed, including submission of field duplicates and insertion of commercial standards for all types of drilling. |
| | Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1m samples from which 3kg was pulverised to produce a 30g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information | DD sampling intervals were based on lithology and/or alteration changes. The core was cut in half longitudinally using a core saw. Each 1m RC sample was split into two 1 kg samples. The remaining sample was used to create a 4m composite sample.<br>Sample preparation included:<br>• Drying the sample at 105°C for 4 hours.<br>• Grinding the sample to less than -6mm. A quartz wash was completed after every grind.<br>• Splitting the sample using a riffle splitter.<br>• Pulverising the sample for 4 minutes to achieve 85% of sample passing -75µm in grain size. A quartz wash was completed after every sample. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | RC and DD samples are analysed by fire assay method with a detection level of 0.01ppm Au. |
| Drilling techniques | Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc). | Minerex Drilling drill some of the RC holes at Julie West and Danyawu, all other RC and DD holes was drilled by Geodrill using a drill rig with speciation's for a high-quality sample. All RC and DD holes were drilled with one of the below rig types<br>• KL900: Sandvik 820 crawler-mounted multi-purpose drill. RC with 5⅜ hammer bits; Core HQ & NQ2 (wireline methods).<br>• UDR650: Sandvik 810 truck-mounted multi-purpose drill. RC with 5⅜ hammer bits; Core HQ & NQ2 (wireline methods).<br>A Reflex EZ-Trac single shot downhole camera was used to measure the orientation of all holes at 30m downhole intervals from surface. |
| Drill sample recovery | Method of recording and assessing core and chip sample recoveries and results assessed. | DD core recovery is logged and recorded in the database. No significant core loss has occurred. RC recovery was visually assessed and considered to be acceptable within the mineralised zones. |
| | Measures taken to maximise sample recovery and ensure representative nature of the samples. | DD core recovery is generally very good (>90%). However, the core recovery of shallow DD holes in oxidised material is 80–90%. Overall, the quality of DD sampling is excellent.<br>The quality of RC drill samples is very good. |
| | Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material. | Sample recovery is generally very high within the mineralised zones. No significant bias is expected, and any potential bias is not considered material. |
| Logging | Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resources | DD core and RC drill chips were logged in detail over the entire hole length (at 1m intervals for RC samples). Colour, lithology, degree of oxidation and water table depth etc were recorded. DD was geotechnically logged for recovery and rock quality designation. Structure type and orientation are recorded in the database. DD core and RC chip trays are stored at the main exploration camp. |
| | Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography. | DD and RC logging included records of lithology, oxidation state, colour, mineralisation, alteration and veining. Core was photographed dry and wet. |
| | The total length and percentage of the relevant intersections logged. | All holes were geologically logged in full. |
| Sub-sampling techniques and sample preparation | If core, whether cut or sawn and whether quarter, half or all core taken. | DD core was sawn in half. |
| | If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. | RC samples were collected on the rig using cone or riffle splitters. Samples were generally dry. |
| | For all sample types, the nature, quality and appropriateness of the sample preparation technique. | Samples were crushed to -6mm and riffle or cone split to obtain a representative fraction weighing 50g. Samples were then dried and ground to 85% passing 75 microns using laboratory mills for Fire Assay analysis. The resultant prill is |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | dissolved in aqua regia and gold content is determined by flame atomic absorption spectroscopy (AAS). |
| | Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. | Field QA/QC procedures included insertion of field duplicates and commercial standards for RC drilling. No field duplicates were inserted with DD core samples. Standards, duplicates and blanks were inserted in every batch (1 per 50 samples).<br>Laboratory QA/QC procedures included:<br>• Every 50th sample was screened to check grinding results (% passing 2mm and 75 microns).<br>• 1 reagent blank was inserted every 50 samples, 1 preparation process blank was inserted every 50 samples and 1 weighed replicate was inserted every 50 samples.<br>• 1 preparation duplicate (re-split) every 50 samples and 2 certified reference materials (CRMs) every 50 samples.<br>Repeat analyses are completed whenever an analytical batch fails to meet the laboratory standards or when requested by a client. |
| | Measures taken to ensure that the sampling is representative of the insitu material collected, including for instance results for field duplicate/second-half sampling | Duplicate samples are taken for all drilling except DD. The duplicate versus original sample results is considered satisfactory. |
| | Whether sample sizes are appropriate to the grain size of the material being sampled | Sample size is considered appropriate. |
| Quality of assay data and laboratory tests | The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. | The analytical technique used was fire-assay with an atomic-absorption finish which is industry standard for Au. |
| | For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. | No geophysical tools, XRF instruments etc were used to determine any element concentrations used in the resource estimates. |
| | Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established. | Field QA/QC procedures included the insertion of field duplicates, blanks and commercial standards. |
| Verification of sampling and assaying | The verification of significant intersections by either independent or alternative company personnel. | Independent company personnel visually verified intersections in both DD core and RC chips at all prospects. |
| | The use of twinned holes. | Twinned holes were drilled at all areas. Results were generally consistent between holes. |
| | Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. | Field data was all recorded as hard copies. Geological logging and sample intervals were recorded in digital form using a logging computer or Excel templates. This data was imported into a SQL database for validation and QC. The analytical data was imported into SQL database with all related metadata and QA/QC information. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | Discuss any adjustment to assay data. | No adjustments were made, other than for values below the assay detection limit. These values have been entered as the negative of the detection limit. Half the detection limit was used in the MRE. |
| Location of data points | Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. | The collar locations of all holes were initially surveyed using a hand-held GPS (accurate to ±2m). All holes were later resurveyed using a total station instrument or a Dual Frequency differential GPS (accurate to ±2cm). |
| | Specification of the grid system used. | The grid system is WGS84 Zone 30 North. |
| | Quality and adequacy of topographic control. | The topographic surfaces for Kunche, Bepkong, Aduane, Kunche NW, Julie, Julie NW, Alpha/Bravo and Danyawu were created using a GeoEye image and Digital Surface Model. This was corrected and validated using DGPS drill hole points collected in the field. Other areas used drill hole survey data. Drill hole's RL was assigned from Geoeye's elevation when available "DTMRL". |
| Data spacing and distribution | Data spacing for reporting of Exploration Results. | **Kunche**: Holes were drilled on a 20m by 20m pattern within mineralised zones.<br>**Bepkong**: Holes were drilled on a 25m by 25m pattern within mineralised zones and on a 25–50m by 100–150m pattern as a mapping grid.<br>**Aduane**: Holes were generally drilled 20-50m apart across-strike and 25-100m apart along-strike of the mineralised zone.<br>**Julie**: Holes were drilled on a nominal 50mN x 50mE to 25mN x 25mE pattern (or better) within mineralised zones. In more tightly drilled areas drill holes may be within 20m horizontal separation on section.<br>**Collette**: Holes were generally drilled on a 50m by 50–100m pattern.<br>**Julie NW**: Holes were drilled on a 20-40m by 20-40m pattern within mineralised zones.<br>**Danyawu**: Holes were drilled on a 10-25m by 10-25m pattern within mineralised zones.<br>**Alpha/Bravo:** Holes were drilled on a 20-80m by 15-40m pattern within mineralised zones<br>**Josephine**: Holes were drilled on a 25-50m by 25-50m pattern within mineralised zones.<br>**Manwe**: Holes were drilled on a 25-50m by 25-50m pattern within mineralised zones.<br>**Kunche NW**: Holes were drilled on a 50m by 25m pattern within mineralised zones.<br>**Yagha**: Holes were drilled on a 50-100m by 25m pattern within mineralised zones. |
| | Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. | The data spacing and distribution is considered sufficient to demonstrate spatial and grade continuity of the mineralised zones to support the classification of Measured, Indicated and Inferred Mineral Resources under the 2012 JORC Code. |
| | Whether sample compositing has been applied. | Single metre RC samples were composited into 4m intervals. Composite samples returning greater than 0.1g/t Au were resubmitted as 1m samples for analysis. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| Orientation of data in relation to geological structure | Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. | **Kunche**, **Bepkong, Aduane, Kunche NW and Yagha**: Drilling sections are orientated perpendicular to the strike of the mineralisation. About 5% of drill holes, mainly at Aduane, were drilled from north-east to south-west. The majority of the holes dip between -50° and -60° to maintain high angles to the mineralisation.<br>**Julie**: Drill sections are orientated north to south across strike of the mineralised zone. The majority of the holes dip between -45° and -60° towards the south.<br>**Julie W**: Drill sections are orientated 230° perpendicular to the strike of mineralisation and across strike of the mineralised zone. Holes dip either -60° or -90°.<br>**Danyawu**: Drill sections are orientated east west and perpendicular to the strike of mineralisation and across strike of the mineralised zone. The majority of the holes dip between -60° and -90°.<br>**Alpha/Bravo**: Drill sections are orientated 180° or 230° perpendicular to the strike of mineralisation and across strike of the mineralised zone. The majority of the holes dip between -50°.<br>**Josephine**: Drill sections are orientated 230° perpendicular to the strike of mineralisation and across strike of the mineralised zone. Holes dip either -60° or -90°.<br>**Manwe**: Drill sections are orientated are orientated between 230° and 270° and across strike of the mineralised zone. The majority of the holes dip between -50° and -60°.<br>**Collette**: Drill sections are orientated north to south and across strike of the mineralised zone. The majority of the holes dip between -35° and -60°. |
| | If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material. | No orientation based sampling bias has been identified in the data based on the interpreted mineralised structures. |
| Sample security | The measures taken to ensure sample security. | Chain of Custody is managed by Azumah staff (geologists and technicians). Samples are stored on site and delivered to the SGS Laboratory at Tarkwa, Intertek Minerals Limited at Tarkwa or Minalytical in Perth. Samples submission sheets are in place to track the progress of every batch of samples. |
| Audits or reviews | The results of any audits or reviews of sampling techniques and data. | Sampling techniques are consistent with industry good practice. Data was validated by CSA Global during loading into the database. Checks included Depth from Depth to, sample interval hole depth and overlapping sample intervals. Any data which failed the checking process is returned to Azumah for validation. Global consistency was also checked at a later stage by plotting holes on sections using the database and reconciling assays against the geology. |

***Section 2 Reporting of Exploration Results***

(Criteria listed in the preceding section also apply to this section.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| Mineral tenement and | Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint | The **Kunche**, **Bepkong, Aduane, Kunche NW and Yagha** prospects are located within the 100% Azumah owned exploration license ML10/11. **Julie** is located within ML10/5. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| land tenure status | ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. | **Collette** is located within PL10/4. **Julie West, Danyawu** and **Alpha/Bravo** are all located with PL10/13 **Josephine** and **Manwe** are located within PL10/9. All license areas are located in the Upper West Region in the north-west corner of Ghana. |
| | The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area. | The tenements are in good standing with no known impediments. Two mining leases, over the main Kunche-Bepkong-Aduane and Julie deposits, were issued in July 2014. |
| Exploration done by other parties | Acknowledgment and appraisal of exploration by other parties. | Previous mapping and exploration works were completed by BHP-Utah (1990's), AGEM (late 1990's) and Semafo (late 1990's). All exploration activities have been completed by Azumah and Castle since 2006. |
| Geology | Deposit type, geological setting and style of mineralisation. | The Project covers approximately 70% of the Palaeoproterozoic Upper and Lower Birimian units, typically known as the Wa-Lawra greenstone belt, within Ghana. Gold mineralisation occurs as follows:<br>**Kunche**: Brittle quartz lode/breccia-hosted with higher grade Au mineralisation associated with zones of intense silicification, smoky quartz veins, arsenopyrite and pyrrhotite. Mineralisation is steeply dipping striking NS and extends 1.8 km.<br>**Bepkong, Aduane**: Increased ductile shearing and dismemberment of quartz veins. Greater than 1 g/t Au mineralisation occurs within translucent quartz veins and arsenopyrite. Mineralisation is steeply dipping striking NS, Bepkong's mineralisation extends 700m and Aduane's mineralisation is several 100-150m zones of mineralisation. Thickness ranges from 1m to 30m.<br>**Kunche NW**: Brittle sheared quartz lode/breccia-hosted with higher grade Au mineralisation associated with zones of intense silicification, smoky quartz veins, arsenopyrite and pyrrhotite. The mineralisation is subvertical striking NS and varies in thickness from 1m to 15m with an average of approximately 4m. The mineralised vein has a north-south extent of 350m.<br>**Yagha**: Brittle sheared quartz lode/breccia-hosted with higher grade Au mineralisation associated with zones of intense silicification, smoky quartz veins, arsenopyrite and pyrrhotite. The mineralisation is subvertical striking NS and varies in thickness from 1m to 15m with an average of approximately 4m. The mineralised vein has a north-south extent of 1400m.<br>**Julie**: Quartz veining and lodes within sheared granodiorite host. Au mineralisation is associated with silicification, pyrite, chalcopyrite, carbonate, sericite and haematite alteration.<br>**Collette**: Quartz veining with at least 3 orientations. Au mineralisation is associated with silicification, arsenopyrite, pyrite, haematite alteration and glassy translucent quartz veining.<br>**Julie West** is almost exclusively confined to a moderately dipping (-50° striking 220°) quartz reef, with only subordinate grades being reported in the host diorite. The primary vein dips to the northeast and varies in thickness from 1m to 9m with an average of approximately 3.5m. The mineralised vein has a north-south extent of 560m. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | **Danyawu** is defined by a zone of quartz veining with minor pyrite alteration within a host granodiorite. This zone has a moderately shallow north dip with the mineralisation exhibiting a well-defined 40° plunge to the north northeast. The primary vein varies in thickness from 1m to 16m with an average of approximately 8m. The mineralised vein currently has a drill defined north-south extent of 120m.<br>**Josephine** is defined by a zone of quartz veining with minor pyrite and arsenopyrite within metamorphosed phyllites and quartzite. There are a number of steeply dipping lodes striking 310°, approx. 500m in length. Au mineralisation is associated with silicification, arsenopyrite, pyrite, and glassy translucent quartz veining.<br>**Manwe**. Au mineralisation is associated with silicification, arsenopyrite, pyrite, haematite alteration and glassy translucent quartz veining, along contact of the phyllite and schist. The main zone consists of two plunging shoots of mineralisation with widths of around 60 m and thickness up to 15 m. The shoots plunge at 10 degrees towards 350 degrees, dipping at 48 degrees to the east. Known shoot length is 200m. |
| Drill Hole Information | A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:<br>• easting and northing of the drill hole collar<br>• elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar<br>• dip and azimuth of the hole<br>• down hole length and interception depth<br>• hole length. | A summary of drilling data is shown below:<br>**Kunche**:<br>• Collar data from 526,352mE through 527,665mE and from 1,147,960mN through 1,149,898mN.<br>• RL varies from 280.8m to 318.0m.<br>• Dip varies from -35° to -90° (average -50°) and hole azimuths vary from 80° to 100°.<br>• Depths of intersection are from 0m to 170m.<br>• The average hole length is 114.7m (from 20m to 339.2m).<br>**Bepkong**:<br>• Collar data from 526,437mE through 527,690mE and from 1,151,426mN through 1,152,851mN.<br>• RL varies from 228.3m to 279.0m.<br>• Dip varies from -30° to -90° (average -50°) and hole azimuths vary from 170° to 180°.<br>• Hole lengths are generally between 30m and 170m and depths of intersection are from 3 to 140m.<br>• The average hole length is 82.9m (from 16m to 386.8m).<br>**Aduane**:<br>• Collar data from 526,709mE through 527,700mE and from 1,149,950mN through 1,151,800mN.<br>• RL varies from 267m to 299m.<br>• Dip varies from -30° to -55° and Azimuth varies from 0° to 360°.<br>• Hole lengths are 20m to 357m and depths of intersection are from 0m to 150m.<br>• The average hole length is 101m.<br>**Julie**:<br>• Collar data from 592,500mE through 598,200mE and from 1,115,300mN through 1,116,500mN.<br>• RL varies from 270m to 350m.<br>• Dip varies from -45° to -60° (average -50°) and hole azimuths although generally N – S vary from 0° to 330°.<br>• Drill holes are 20m to 275m in length and depths of intersection along the full length.<br>• The average hole length is 77m. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | **Collette**:<br>• Collar data from 604,447mE through 607,400mE and from 1,117,738mN through 1,118,809mN.<br>• RL varies from 237.7m to 261.6m.<br>• Dip varies from -35° to -60° (average -50°) and hole azimuths vary from 135° to 185°.<br>• Drill holes are 30m to 170m in length and depths of intersection are from 3m to 140m.<br>• The average hole length is 69.0m (from 20.0 m to 246.0 m).<br>**Julie West**:<br>• Collar data from 588630mE through 589420mE and from 1,116,292mN through 1,117,241mN.<br>• RL varies from 243m to 250m.<br>• Dip varies from -48° to -90° (average -56°) and hole azimuths although 230 vary from 230° to 260°.<br>• Drill holes are 15m to 220m in length and depths of intersection along the full length.<br>• The average hole length is 60.7m.<br>**Danyawu**:<br>• Collar data from 588,613mE through 588,820mE and from 1,118,980mN through 1,119,102mN.<br>• RL varies from 230m to 236m.<br>• Dip varies from -48° to -90° (average -58°) and hole azimuths although generally 230 vary from 0° to 324°.<br>• Drill holes are 42m to 177m in length and depths of intersection along the full length.<br>• The average hole length is 75m.<br>**Alpha/Bravo**:<br>• Collar data from 559,797mE through 587,975mE and from 1,114,793mN through 1,115,500mN.<br>• RL varies from 247m to 274m.<br>• Dip varies from -48° to -60° (average -55°) and hole azimuths although generally 240 vary from 0° to 360°.<br>• Drill holes are 25m to 102m in length and depths of intersection along the full length.<br>• The average hole length is 57m.<br>**Josephine**:<br>• Collar data from 576,121mE through 576,823mE and from 1,099,664mN through 1,100,318mN.<br>• RL varies from 350m to 363m.<br>• Dip varies from -48° to -80° (average -52°) and hole azimuths although generally $230^0$ vary from 50° to 250°.<br>• Drill holes are 22m to 174m in length and depths of intersection along the full length.<br>• The average hole length is 79m.<br>**Manwe**:<br>• Collar data from 572,861mE through 573,204mE and from 1,104573mN through 1,105,550mN.<br>• RL varies from 334m to 347m.<br>• Dip varies from -48° to -61° (average -52°) and hole azimuths although generally 230° vary from 214° to 270°.<br>• Drill holes are 70m to 120m in length and depths of intersection along the full length.<br>• The average hole length is 87m. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | **Kunche NW**:<br>• Collar data from 525,600mE through 525,758mE and from 1,150,552mN mN through 1,150,802mN.<br>• RL varies from 267m to 269m.<br>• Dip varies from -48° to -61° (average -55°) and hole azimuths are generally at 90°.<br>• Drill holes are 50m to 145m in length and depths of intersection along the full length.<br>• The average hole length is 77m.<br>**Yagha**:<br>• Collar data from 525,383mE through 525,475mE and from 1,159,644mN through 1,159,898mN.<br>• RL varies from 315m to 322m.<br>• Dip varies from -45° to -90° (average -57°) and hole azimuths are generally at 90°.<br>• Drill holes are 55m to 108m in length and depths of intersection along the full length.<br>The average hole length is 73m. |
| | If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case. | Not applicable. |
| Data aggregation methods | In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated. | Not relevant when reporting Mineral Resources. |
| | Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. | Not relevant when reporting Mineral Resources. |
| | The assumptions used for any reporting of metal equivalent values should be clearly stated. | Not relevant. |
| Relationship between mineralisation widths and intercept lengths | These relationships are particularly important in the reporting of Exploration Results. | Drill hole dips vary between -30° and -90°. Most of the hole drill holes were drilled perpendicular the mineralisation. |
| | If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. | All mineralised units of **Kunche, Bepkong, Aduane, Kunche NW**, **Yagha** are sub-vertical. The true thickness of the mineralised intercepts is ±75% of the downhole intercept length. The true width is 2.5–20m at **Kunche**, 3–20m at **Bepkong** and 1.5–15m at **Aduane**.<br>The **Julie** mineralised zone is northerly dipping (generally 30°-35°) and the true thickness of the mineralised intercepts is close to the downhole intercept length.<br>The **Collette** mineralised zone is northerly dipping (30°-40°) and the true thickness of the mineralised intercepts is very close to the downhole intercept length. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | **Julie West's** mineralised zone is north westerly striking dipping at (30°-40°) and the true thickness of the mineralised intercepts is very close to the downhole intercept length.<br>**Danyawu's** mineralised zone is northerly plunging shoot (generally 10°-30°) and the true thickness of the mineralised intercepts is close to the downhole intercept length.<br>**Josephine's** mineralised units are steeply dipping northwesterly, striking northeasterly. The true thickness of the mineralised intercepts is ±75% of the downhole intercept length.<br>**Manwe's** mineralised zone is set of northerly plunging shoot (generally 10°-30°) and the true thickness of the mineralised intercepts is close to the downhole intercept length. |
| | If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known'). | Not relevant. |
| Diagrams | Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views. | Refer to diagrams in body of text. |
| Balanced reporting | Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results. | Not relevant when reporting Mineral Resources. |
| Other substantive exploration data | Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances. | **Geochemistry:**<br>Surface sampling, mapping and geochemistry were completed by BHP and Azumah.<br>The geochemical database contains data for 51,680 soil samples and 228,673m of combined auguring and AC drilling.<br>**Airborne Geophysics:**<br>A high resolution aeromagnetic and radiometric survey was completed over the central region of the Wa-Lawra Belt (over the Vapor PL) with line spacing of 100m and sensor height of 40m. The Wa-Lawra Belt geophysical data has been interpreted at 1:100,000 scale by Southern Geoscience Ltd. The processed imagery has provided a base for a new regional geological interpretation.<br>**Ground Geophysics:**<br>Magnetics: A ground magnetic survey conducted in 2006 was plagued by data acquisition problems and the data were rejected as being of insufficient quality for interpretation.<br>**Induced Polarisation:**<br>SAGAX Afriques completed a gradient induced polarisation survey (IP) over the Kunche and Bepkong deposits. The anomalies were interpreted to be caused by disseminated sulphides and quartz veining. The IP survey outlined several |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | linear zones with a similar geophysical response, particularly a prominent linear anomaly west of Kunche. Three dominant orientations were interpreted as a dextral reverse shear model.<br><br>Several other geophysical targets were identified and require drill testing.<br><br>**Metallurgical Test Work:**<br><br>Extensive metallurgical test work has been undertaken on the **Kunche, Bepkong** and **Julie** deposits. There has been only minor work completed on **Collette**, **Julie NW** and **Danyawu** and no work on **Aduane, Josephine, Manwe, Kunche NW** or Y**agha**.<br><br>Metallurgical test work performed on the **Kunche, Bepkong** and J**ulie** ores has included:<br><br>• Comprehensive head analysis.<br>• Comminution.<br>• Gravity concentration.<br>• Direct cyanide leaching.<br>• Carbon kinetics.<br>• Thickening.<br>• Rheology.<br>• Oxygen uptake.<br>• Cyanide detoxification.<br>• Variability testing.<br><br>In addition for Julie ore, test work has included:<br><br>• Bulk sulphide flotation.<br>• Ultra-fine grinding (UFG) of concentrate.<br>• Cyanide leaching of UFG flotation concentrate and of flotation tailings.<br>• QEM*SCAN® analysis of Julie concentrate products.<br><br>**Collette** testing only includes:<br><br>• Gravity concentration.<br>• Direct cyanide leaching.<br><br>**Potential Deleterious Substances:**<br><br>Both **Kunche** and **Bepkong** mineralisation contains small quantities of organic carbon, arsenic in the form of arsenopyrite, and other sulphide mineralisation.<br><br>In general, this does not appear to have a significant deleterious effect on gold extraction. The limited number of **Kunche** primary variability composites that do exhibit a reduction in extraction have been included in the correlation equation for gold recovery.<br><br>Preliminary testing indicates the flotation/regrind circuit designed for the **Julie** primary ore may also benefit some of the **Kunche** primary ore and further test work is planned on some **Kunche** primary ore samples.<br><br>**Julie** mineralisation contains sulphides which is predominantly pyrite and relatively unreactive. Approximately 35% of the gold is associated with pyrite which can be recovered by |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | flotation and fine grinding of concentrate prior to extraction by cyanide. |
| Further work | The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling). | Further drilling is also required to better define the structural geological framework. Any additional work is expected to have a reasonable prospect for increasing the interpreted total volumes and shapes of mineralised bodies that have not yet been drill tested along strike and down dip from the currently interpreted horizons. |
| | Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive. | Refer to diagrams in body of text. |

### *Section 3 Estimation and Reporting of Mineral Resources*

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| Database integrity | Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. | All drill hole information including collar surveys, assays, hole surveys, lithological logs and density data are stored in Datashed, a relational database with inbuilt validation procedures. The database is maintained by CSA Global, with data security of paramount importance. Database and files were backed up to a server on a regular basis.<br><br>Validation steps included checking for coincident collar coordinates, overlapping sample intervals, priorities given to relevant assays fields, abrupt changes in down hole surveys and missing data. These steps were independently carried out during loading of data into Datamine and Micromine. Validation protocols for the data entered to the Datashed database are described in Section 1. |
| | Data validation procedures used. | Validation of the imported data included checks for overlapping intervals, missing survey data, missing assay data, missing lithological data and missing collars. The surveyed drill holes were also verified against paper sections containing the lithological interpretation. |
| Site visits | Comment on any site visits undertaken by the Competent Person and the outcome of those visits. | The Competent Person (data) visited site on two occasions.<br><br>29th January 2018 to 8th February 2018, inspected RC drilling on Wa Lawra leases.<br><br>23rd June to 30th June 2018, inspected diamond drilling activities on the Wa East leases.<br><br>A site visit was also conducted in 2010 by a CSA Global geologist, with drilling and sampling activities observed at the time.<br>The Competent Person (data) believes the quality of sampling, lithological logging and sample chain security are of sufficient quality to support the use of the samples in the Mineral Resource estimate. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| Geological interpretation | Confidence in (or conversely, the uncertainty of ) the geological interpretation of the mineral deposit. | There is a reasonable level of confidence in the geological interpretation of gold mineralised units. The units are traceable over numerous drill holes and drill sections and in surface mapping. Additional work is required to better define depth extents of the interpreted mineralised bodies. Further work is also required to better define the structural geological framework. Any additional work is expected to have a reasonable prospect for increasing the interpreted total volumes and shapes of mineralised bodies that have not yet been drill tested along strike and down dip from the currently interpreted horizons. |
| | Nature of the data used and of any assumptions made. | Surface mapping of mineralised outcrops using trenches, drill hole intercept assay results and structural interpretations have formed the basis for the geological interpretation. |
| | The effect, if any, of alternative interpretations on Mineral Resource estimation. | The precise limits and geometry cannot be accurately defined due to limitations of the current drill coverage. Further work is required to better define the geometry and limits of the mineralised bodies but no significant downside changes to the interpreted mineralised volume are anticipated. |
| | The use of geology in guiding and controlling Mineral Resource estimation.<br><br>The factors affecting continuity both of grade and geology. | The lithological interpretation was carried out to define domains of oxidised and transitional rock which have different physical and metallurgical properties. These lithological domains were utilised for Mineral Resource estimation. |
| Dimensions | The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource. | **Kunche**: The Au mineralisation was interpreted 1.54km along-strike (north-south). The mineralisation has a sub-vertical dip and is 20m to 50m in width. The vertical range of interpreted mineralisation is 160m–170m.<br>**Bepkong**: The Au mineralisation was interpreted 1.2km along-strike (north-south). The mineralisation has a sub-vertical dip (80°–90°). The lens thicknesses vary between 8m and 15m thick with the depth extent limited to a fixed 75mRL (or on average approximately 100m to 120m below surface).<br>**Aduane**: The interpretation of Au mineralisation includes 20 separate, sub vertical mineralised envelopes striking NS with are located within a zone 1.7km in strike-length. The lens thicknesses vary between 2.5m and 7m and the depth varies from 40m to 110m below surface.<br>**Julie**: The Au mineralisation has been interpreted along 5.4km along-strike (E-W). The mineralisation has a shallow to moderate dip to the north and consists of multiple mineralised shears and lodes varying in thickness from as little as a few metres to a maximum of around 30m. The mineralisation is not consistent along the strike length but thickens and thins and grade intensity is strongly variable. The vertical range of interpreted mineralisation is between 40m and 180m below surface. Plan width varies between 50m and 300m.<br>**Collette**: The mineralised bodies were interpreted as 43 individual sub-parallel lodes using a 0.5 g/t cut-off grade. The lodes generally dip 60° to the north and are approximately 3 m in width. The mineralisation extends over a 50m wide corridor for 2.5km. The interpreted mineralisation extends to approximately 30–50m depth.<br>**Julie West.** The primary vein strikes at 330° dips to the north east and varies in thickness from 1m to 9m with an average of |

| Criteria | JORC Code explanation | Commentary |
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| | | approximately 3.5m. The mineralised vein has a north-south extent of 560m. The vertical range of interpreted mineralisation is between 40m and 180m below surface.<br>**Danyawu:** The primary vein dips to the north-northeast and varies in thickness from 1m to 16m with an average of approximately 8m. The mineralised vein has a north-south extent of 120m and a vertical extent of 90m from surface at 260mRL to 170mRL.<br>**Alpha/Bravo:** Two zones of plunging mineralised quartz. The interpretation of Au mineralisation includes 3 separate mineralised envelopes striking to the NW with 200m strike-length. The mineralised envelopes thicknesses vary between 2m and 8m and vertical extent of 115m, 260mRL to 150mRL.<br>**Josephine:** The interpretation of Au mineralisation includes 5 separate subvertical envelopes striking to the NW with 400m strike-length. The mineralised envelopes thicknesses vary between 2m and 25m and vertical extent of 175m, 365mRL to 190mRL.<br>**Manwe:** Two zones of shallowly plunging mineralised quartz. The interpretation of Au mineralisation includes 5 separate mineralised envelopes striking to the north with 250m strike-length. The mineralised envelopes thicknesses vary between 1m and 22m and vertical extent of 135m, 365mRL to 230mRL.<br>**Kunche NW:** The Au mineralisation was interpreted 350m along-strike (north-south). The mineralisation has a sub-vertical dip and is 2m to 15m in width. The vertical range of interpreted mineralisation is 160m–170m.<br>**Yagha:** The Au mineralisation was interpreted 1400m along-strike (north-south). The mineralisation has a sub-vertical dip and is 2m to 15m in width. The vertical range of interpreted mineralisation is 160m–170m. |
| Estimation and modelling techniques | The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used<br><br>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. | The grade estimations were by ordinary kriging (OK) using Datamine. 1m composite intervals were used for estimation.<br>**Kunche:**<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 5m (X) by 10m (Y) by 5m (Z) was constructed. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas.<br>• A categorical indicator approach was used to define the mineralisation envelopes by estimating the probability of areas being mineralised or unmineralised. An Au cut-off grade of 0.2 g/t was used as the probability indicator. This probabilistic technique was used as it results in the mineralised zones being defined in detail and with a high resolution and without bias or triangulation issues. A resolution of 2 x 2 x 2 (X, Y, Z) was used. Mineralisation envelopes generated using this approach were used for sample coding and block model construction.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample |

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| | | data were statistically reviewed to determine appropriate top cuts, with a top cut of 20g/t was applied.<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Downhole and directional variograms were modelled for the mineralised domain. Variograms were modelled in the plane of mineralisation (350° strike with steep dip to the west) with the primary direction modelled with a shallow plunge to the south. This direction is supported observation of galamsey working and drill core. A high relative nugget effect (~ 50%) was modelled for the mineralised domain with a range short range of 60m with ranges extend to approximately 140m in the principal direction. Most of the population variance is accommodated within the short range.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The first pass used a search ellipse of 40m (major) by 30m (semi-major) by 5m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii tripled to the maximum range from the variography, to the to fill the remaining blocks. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 30 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• Datamine's Dynamic Anisotropy (DA) was used to control the orientation of the search ellipsoids. DA estimates the local dip and dip directions of the mineralisation using trend surface following the trend of the mineralisation. The search ellipse orientations were reviewed for randomly selected blocks by comparing the interpolated dip and dip directions with the ellipse (wireframe solid).<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>• The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data.<br>**Bepkong**:<br>Grade interpolation was carried out using OK (Datamine Studio 3). Top cuts were applied to unit 101 (30 g/t Au) and units 102, 113,114 and 115 (20 g/t Au). The ranges of semivariogram are 35/56m along-strike, 35/86m down-dip and 23/34m across strike. A minimum of 12 and a maximum of 30 samples were used from a minimum of 2 drill holes.<br>The parent block size is 5mN x 10mE x 5mRL, with sub-celling to 1mE x 1mN x 1mRL for domain volume resolution. The parent block size is based on a section interval of approximately 25m for about one third of the modelled strike length, with the remainder being nominally 50m apart. The search ellipse has been oriented in a north-south direction. The major axis has a bearing of 50° and the semi major dips at 40° towards 180°. |

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| | | Search ellipse dimensions are 35m x 35m x 20m.<br>**Aduane**:<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 5m (X) by 10m (Y) by 5m (Z) was constructed. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts, with a top cut of 12g/t was applied.<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Composite samples and mineralised envelopes were flattened in easting for statistical analyses and interpolation.<br>• Downhole and directional variograms were modelled the mineralised domain. Variograms were modelled in the plane of mineralisation. A nugget of 28% was modelled for with a short range of 20 m with ranges extend to 57 m. Most of the population variance is accommodated within the short range.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The search ellipse was flattered in easting along with the composites and model during the interpolation The first pass used a search ellipse of 40 m (major) by 30 m (semi-major) by 5 m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radius tripled, to the to fill the remaining blocks. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 30 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data<br>**Julie:**<br>• Datamine software was used for geological modelling, block model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 10m (X) by 5m (Y) by 5m (Z) was constructed. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas. |

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| | | • Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts, with the following top cuts applied:<br>• Far East (40 g/t); East (60 g/t); Central (no top cut); West (40 g/t); and Far West (20 g/t).<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Datamine to determine if they were clustered with other high-grade samples.<br>• Downhole and directional normal scores variograms were modelled for the three domains with the largest sample populations, from the Far East, East and West areas. Variograms were modelled in the plane of mineralisation (moderate dip to north) with the primary direction modelled with a shallow plunge to the NNW in each domain. This direction is supported by a dominant NW- to N-plunging extension lineation as observed in diamond drill core. A high relative nugget effect (~ 70%) was modelled for each domain with a short range of approximately 20m in the principal direction. Most of the population variance is accommodated within the short range. The full variogram ranges extend to 100m.<br>• Kriging neighbourhood analyses were undertaken to determine the optimal block model size, search ellipse radii, and number of samples to estimate each block.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The first pass used a search ellipse of 30m (major) by 30m (semi-major) by 10m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii quadrupled, so as to allow unestimated blocks to be interpolated. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 8 and maximum of 34 samples from a minimum of 4 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• Datamine's Dynamic Anisotropy (DA) was used to control the orientation of the search ellipsoids. DA estimates the local dip and dip directions of the domain envelope (wireframe solids) into each block and the ordinary kriging uses the estimated parameters to align the search ellipse. The search ellipse orientations were reviewed for randomly selected blocks by comparing the interpolated dip and dip directions with the ellipse (wireframe solid).<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>• The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data.<br>**Collette**: |

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| | | Grade interpolation was carried out using OK (Datamine Studio 3). Variograms were modelled using composite samples from lodes 24, 25, 26, 27, 28, 29, 31, 32 and 40. Semivariogram ranges are 66m along-strike, 41m down-dip and 10m across strike. A minimum of 8 and a maximum of 40 samples were used from a minimum of 2 drill holes.<br>The parent block size is 25mN x 5mE x 10mRL, with sub-celling to 2.5mE x 1mN x 1mRL for domain volume resolution. The parent block size is based on a section interval of approximately 50m for about one fifth of the modelled strike length, with the remainder being nominally 100m apart. The search ellipse has been oriented east-west. The major axis has a bearing of 90° and the semi major axis dips -60° towards 40°.<br>Search ellipse dimensions are 65m x 40m x 10m.<br>**Kunche NW**:<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 5m (X) by 10m (Y) by 5m (Z) was constructed. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts. Composites within the mineralisation envelopes ranges between 0.03 and 8.86 with a low coefficient of variance. No top cuts were applied.<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Composite samples and mineralised envelopes were flattened in easting for statistical analyses and interpolation.<br>• Variography of nearby Aduane was used for Kunche NW. A nugget of 28% was modelled for with a short range of 20m with ranges extend to 57m.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The search ellipse was flattered in easting with the composites and model during the interpolation the first pass used a search ellipse of 60m (major) by 45m (semi-major) by 5 m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii tripled, to the to fill the remaining blocks. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 30 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation. |

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| | | The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data<br>**Yagha**:<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 5m (X) by 10m (Y) by 5m (Z) was constructed. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts. A top cut of 10g/t was applied.<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Composite samples and mineralised envelopes were flattened in easting for statistical analyses and interpolation.<br>• Variography of nearby Aduane was used for Yagha. A nugget of 28% was modelled for with a short range of 20m with ranges extend to 57m.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The search ellipse was flattered in easting with the composites and model during the interpolation. The first pass used a search ellipse of 40m (major) by 30m (semi-major) by 5m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii tripled, to the to fill the remaining blocks. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 30 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data<br>**Julie West**:<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 5m (X) by 10m (Y) by 5m (Z) rotated 35° to the west was constructed. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately |

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| | | half the distance of the drill spacing in the more densely drilled areas.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts. Top cuts of 30 g/t and 10g/t were applied.<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Downhole and directional variograms were modelled for the mineralised domain. Variograms were modelled in the plane of mineralisation (330° strike with dip to the north east at 40°). This direction is supported mapping. A nugget effect of 32% was modelled for the mineralised domain with a range short range of 60m with ranges extend to approximately 170m in the principal direction. Most of the population variance is accommodated within the short range.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The search ellipse had an orientation of 330° with dip of -40° to the north east. The first pass used a search ellipse of 40m (major) by 30m (semi-major) by 5m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii tripled to the maximum range from the variography, to the to fill the remaining blocks. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 20 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data.<br>**Danyawu**:<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 5m (X) by 5m (Y) by 5m (Z) was constructed. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts. Top cuts of 40g/t was applied.<br>• Log probability graphs were used to determine the top cuts, |

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| | | and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Downhole and directional variograms were modelled for the mineralised domain. Variograms were modelled in the plane of mineralisation (azimuth 65° plunging at 35° with dip of 20°). This direction is supported mapping. A nugget effect of 16% was modelled for the mineralised domain with a range short range of 65m with ranges extend to approximately 85m in the principal direction. Most of the population variance is accommodated within the short range.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The search ellipse had an azimuth of 65°, plunge of 35° and dip of 20°. The first pass used a search ellipse of 40m (major) by 30m (semi-major) by 5m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii tripled, to the to fill the remaining blocks. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 20 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data.<br>**Josephine**:<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 10m (X) by m (Y) by 5m (Z) rotated at 30° to the west. Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts. Top cuts of 10g/t were applied.<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Downhole and directional variograms were modelled for the mineralised domain. Variograms were modelled in the plane of mineralisation (315° strike, plunge of -65° and dip -60°). This direction is supported observation of galamsey working and mapping. A nugget effect of 35% was modelled for the mineralised domain with a range short range of 40m with ranges extend to approximately 80m in the principal |

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| | | direction. Most of the population variance is accommodated within the short range.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The search ellipse had an orientation of 310° with dip of -60°. The first pass used a search ellipse of 40m (major) by 20m (semi-major) by 5m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii tripled to fill the remaining blocks. The minimum number of samples required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 30 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data.<br>**Manwe**:<br>Micromine software was used for geological modelling, Datamine software was used block for model construction, grade interpolation and final classification of the Mineral Resources.<br>• A block model with block sizes 5m (X) by 10m (Y) by 5m (Z). Sub celling was used to honour the wireframe boundaries. The Easting (X) and Northing (Y) dimensions of the parent cells are approximately half the distance of the drill spacing in the more densely drilled areas.<br>• Blocks were flagged according to the weathering and mineralisation envelopes.<br>• Most drill holes were sampled at 1m intervals and the drill samples were composited to 1m lengths. Composited sample data were statistically reviewed to determine appropriate top cuts. A Top cut of 10g/t was applied.<br>• Log probability graphs were used to determine the top cuts, and the very high-grade samples were reviewed in Micromine to determine if they were clustered with other high-grade samples.<br>• Downhole and directional variograms were modelled for the mineralised domain. Variograms were modelled in the plane of mineralisation (160° strike and dip -37° degrees). This direction is supported by mapping. A nugget effect of 20% was modelled for the mineralised domain with a range short range of 80m with ranges extend to approximately 100m in the principal direction. Most of the population variance is accommodated within the short range.<br>• All grades were interpolated by ordinary kriging. A 3-pass estimation strategy was used. The search ellipse had an orientation of 350° with plunge -5° and dip of -48°. The first pass used a search ellipse of 35m (major) by 15m (semi-major) by 5m (minor) dimensions. The second estimation pass search radii were doubled, and the third pass radii tripled to the maximum range from the variography, to the to fill the remaining blocks. The minimum number of samples |

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| | | required per block estimated was relaxed for the third pass.<br>• A minimum of 5 and maximum of 30 samples from a minimum of 3 drill holes were used to interpolate a cell. Cell discretization of 3 x 3 x 3 (X, Y, Z) was employed. Octant based searching was not used because the sample data is not regarded as clustered.<br>• The mineralisation envelopes were used as hard boundaries during grade interpolation.<br>The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data. |
| | The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. | No mining has taken place. This estimate was based on sample assay results. The database was closed on 31 Julie 2018.<br>An inverse distance squared and cubed algorithm was used to validate the kriged grades.<br>The interpolated grades were validated by way of review of cross sections (block model and drill samples presented with same colour legend), swath plots, and comparison of mean grades from sample data.<br>**Kunche**:<br>A resource at Kunche was first published in 2011. The Mineral Resource estimate was 4.9Mt at 2.0g/t Au (Indicated) and 3.6Mt at 1.7g/t Au (Inferred).<br>An updated Kunche Mineral Resource estimate was previously published in 2013. The Mineral Resource estimate was 8.42 Mt at 1.73g/t Measured,2.24Mt at 1.38g/t Au (Indicated) and 4.86Mt at 1.17g/t Au (Inferred) at a cut-off grade of 0.5g/t Au.<br>Additional drilling conducted between 2013 and 2018 has contributed to the slight increase in tonnage and slight decrease in grade. The current model used a categorical indicator approach was used to define the mineralisation also contributing to the increase in tonnes and slight drop in grade with more overall ounces.<br>**Bepkong**:<br>The Bepkong Mineral Resource estimate was previously published in 2011. The Mineral Resource estimate was 1.93Mt at 2.5g/t Au (Indicated) and 3.87Mt at 2.1g/t Au (Inferred).<br>The current Mineral Resource estimate, after further drilling, is 2.22Mt at 1.79g/t Au (Measured), 1.70Mt at 1.33g/t Au (Indicated) and 1.17Mt at 1.17g/t Au (Inferred) with a cut-off grade of 0.5g/t.<br>**Aduane**: The previous Mineral Resource estimate was published in September 2013 and reported 1.77Mt at 1.5g/t Au (from Au > 0.5g/t) all inferred.<br>Additional drilling conducted between 2013 and 2018 has contributed to the slight increase in tonnage and slight decrease in grade with more overall ounces. Change in drill hole spacing contributed to the change in classification.<br>**Julie**: The previous Mineral Resource estimate was published in September 2014 and reported 16.93Mt at 1.53g/t Au (from Au > 0.5g/t). The 2014 Mineral Resource was a Multiple Indicator Kriging (MIK) recoverable resource which had significant additional dilution built into the model. A direct comparison of the current ordinary kriged and the 2014 MIK estimate based upon tonnage and grade is inappropriate without a detailed |

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| | | discussion comparing the assumptions and parameters used in each estimate.<br>The Julie Mineral Resource was earlier reported in June 2013, based upon an ordinary kriged estimate. The Mineral Resource estimate was reported above a cut-off grade of Au > 0.5g/t. The Mineral Resource estimate was: Measured 0.8Mt at 1.95g/t Au, Indicated 8.33Mt at 2.01g/t Au and Inferred 6.64Mt at 1.9g/t Au (total 16.25Mt at 1.98g/t) and provides a better comparison with the current Mineral Resource.<br>Additional drilling conducted between 2013 and 2018 and additional dry bulk density test work have contributed to the slight increase in tonnage and slight decrease in grade. The current geological interpretation is a refinement of the 2013 interpretation with some domains having increases or decreases in contained volume due to sample grades from recent drilling, and/or a refinement to previous domain interpretations with the removal of excessive dilution in the hangingwall or footwall.<br>**Collette**: The Mineral Resource estimate was completed in 2011. The Mineral Resource estimate was 1.69Mt at 1.45g/t Au.<br>**Julie NW:** The previous Mineral Resource estimate was published in October 2016 and reported 0.38Mt at 4.2g/t Au (Indicated) and 0.03Mt at 4.0g/t Au (Inferred). This was 2009 resource model reported under JORC 2012.<br>Additional drilling conducted between 2009 and 2018 has contributed to the slight increase in tonnage and slight decrease in grade, with more overall ounces.<br>**Danyawu:** The previous Mineral Resource estimate was published in October 2016 and reported 0.07Mt at 5.5g/t Au (Indicated). This was the 2009 resource model re-reported under JORC 2012. Additional drilling conducted between 2009 and 2018 has contributed to the slight increase in tonnage and slight decrease in grade, with more overall ounces.<br>Josephine, Manwe, Alpha/Bravo, Kunche NW and Yagha are all new resource estimates. |
| | The assumptions made regarding recovery of by-products. | The only by products recovered will be immaterial quantities of silver and this has been ignored. |
| | Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation). | As discussed in Section 2 the small quantities of organic carbon and arsenopyrite at Kunche and Bepkong appear not to have a serious deleterious effect on gold extraction, or to be an environmental issue that cannot be adequately mitigated.<br><br>At Julie approximately 35% of the gold is associated with pyrite which can be recovered by flotation and fine grinding of concentrate prior to extraction by cyanide. |
| | Any assumptions behind modelling of selective mining units. | No Selective mining unit assumptions were incorporated in the block models. |
| | Any assumptions about correlation between variables. Any assumptions behind modelling of selective mining units. | Not applicable. No Selective mining unit assumptions were incorporated in the block models. |
| | Description of how the geological interpretation was used to control the resource estimates. Any assumptions about correlation between variables | Estimates are completed for all blocks within the mineralised envelope wireframes. The oxidation surfaces were used for definition of oxidation domains in the block model. Not applicable. |

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| | Discussion of basis for using or not using grade cutting or capping. Description of how the geological interpretation was used to control the resource estimates. | Top cuts for Au were determined using classical statistical methods – histograms and probability plots. Various top cuts were applied to the composited samples and are discussed above under 'Estimation and modelling techniques' Estimates are completed for all blocks within the mineralised envelope wireframes. The oxidation surfaces were used for definition of oxidation domains in the block model. |
| | The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available. Discussion of basis for using or not using grade cutting or capping. | Validation of the block model initially involved comparing the block model volume to the wireframe volume. Grade estimates were then validated by statistical comparison with the drill hole data. Visual comparison of Au grade trends in the model with the drill hole Au grade trends was also completed in addition to swath plots for northing, easting and RL. Reported OK grades were compared to inverse distance grades. No reconciliation data is available. Top cuts for Au were determined using classical statistical methods – histograms and probability plots. Various top cuts were applied to the composited samples and are discussed above under 'Estimation and modelling techniques' |
| | Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content. The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available. | Tonnages are estimated on a dry basis. Validation of the block model initially involved comparing the block model volume to the wireframe volume. Grade estimates were then validated by statistical comparison with the drill hole data. Visual comparison of Au grade trends in the model with the drill hole Au grade trends was also completed in addition to swath plots for northing, easting and RL. Reported OK grades were compared to inverse distance grades. No reconciliation data is available. |
| Moisture | The basis of the adopted cut-off grade(s) or quality parameters applied. Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content. | The Mineral Resource for Kunche, Bepkong, Aduane, Kunche NW, Yagha and Julie are reported above a cut-off grade of 0.5 g/t Au. Julie West, Danyawu, Alpha/Bravo, Josephine and Manwe are reported above a cut-off grade of 1g/t Au. These cut-off grades are considered reasonable for the reporting of a Mineral Resource which will support an open pit mining scenario. Tonnages are estimated on a dry basis. |
| Cut-off parameters | Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made. The basis of the adopted cut-off grade(s) or quality parameters applied. | Mining would be by open cut methods. The widths of the zones of mineralisation would allow a larger scale mining fleet because edge dilution (waste material at the edges of the ore domains being captured in the ore) will be kept to a minimum.<br>The Mineral Resource for Kunche, Bepkong, Aduane, Kunche NW, Yagha and Julie are reported above a cut-off grade of 0.5g/t Au. Julie West, Danyawu, Alpha/Bravo, Josephine and Manwe are reported above a cut-off grade of 1g/t Au. These cut-off grades are considered reasonable for the reporting of a Mineral Resource which will support an open pit mining scenario. |
| Mining factors or assumptions | The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of | Kunche, Bepkong, Aduane, Kunche NW, Yagha Josephine and Manwe's mineralisation contains sulphides which is |

| Criteria | JORC Code explanation | Commentary |
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| | determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made. Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made. | predominantly pyrite and arsenopyrite. In general, this does not appear to have a significant deleterious effect on gold extraction.<br><br>Julie, Julie West, Danyawu and Alpha/Bravo mineralisation contains sulphides which is predominantly pyrite and relatively unreactive. Approximately 35% of the gold is associated with pyrite which can be recovered by flotation and fine grinding of concentrate prior to extraction by cyanide.<br><br>The mineralisation modelled and metallurgical test work available at the resource estimation stage indicated conventional gold extraction for all Kunche and Bepkong ores and for Julie oxide ore by CIL (refer Section 2). Julie primary and transition ores require bulk sulphide flotation with fine grinding of concentrate and leaching of both the flotation concentrate and tailings products. For all ores data indicates recovery of gold would be feasible.<br><br>For Collette, only three oxide samples have been tested by conventional CIL methods. **Julie West and Danyawu** have had cyanide leach test work carried out on pulps and coarse rejects and has shown similar characteristics to the nearby Julie deposit.<br><br>**Aduane, Kunche NW, Yagha, Josephine** and **Manwe** have not been metallugically tested at all. Recoveries for these deposits are expected to be similar to the surrounding larger deposits.<br><br>Subsequent pre-feasibility and feasibility metallurgical work has confirmed the mineralisation is amenable to the gold processing techniques discussed above. Mining would be by open cut methods. The widths of the zones of mineralisation would allow a larger scale mining fleet because edge dilution (waste material at the edges of the ore domains being captured in the ore) will be kept to a minimum. |
| Metallurgical factors or assumptions | Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made. The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical | No detailed assumptions regarding possible waste and process residue disposal options were made.<br><br>Subsequent pre-feasibility and feasibility work has confirmed that mining waste and processing residue can be safely and efficiently placed in adjacent waste dumps and nearby tailings dam. Kunche, Bepkong, Aduane, Kunche NW, Yagha Josephine and Manwe's mineralisation contains sulphides which is predominantly pyrite and arsenopyrite. In general, this does not appear to have a significant deleterious effect on gold extraction.<br><br>Julie, Julie West, Danyawu and Alpha/Bravo mineralisation contains sulphides which is predominantly pyrite and relatively unreactive. Approximately 35% of the gold is associated with pyrite which can be recovered by flotation and fine grinding of concentrate prior to extraction by cyanide.<br><br>The mineralisation modelled and metallurgical test work available at the resource estimation stage indicated conventional gold extraction for all Kunche and Bepkong ores and for Julie oxide ore by CIL (refer Section 2). Julie primary and transition ores require bulk sulphide flotation with fine grinding of concentrate and leaching of both the flotation concentrate and tailings products. For all ores data indicates recovery of gold would be feasible. |

| Criteria | JORC Code explanation | Commentary |
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| | treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made. | For Collette, only three oxide samples have been tested by conventional CIL methods. **Julie West and Danyawu** have had cyanide leach test work carried out on pulps and coarse rejects and has shown similar characteristics to the nearby Julie deposit.<br><br>**Aduane, Kunche NW, Yagha, Josephine** and **Manwe** have not been metallugically tested at all. Recoveries for these deposits are expected to be similar to the surrounding larger deposits.<br><br>Subsequent pre-feasibility and feasibility metallurgical work has confirmed the mineralisation is amenable to the gold processing techniques discussed above. |
| Environmental factors assumptions | Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made. | In-situ dry bulk densities were determined using the water displacement method on wax coated half core samples. An electronic precision balance was used to weigh the samples and standard industry procedures were followed.<br><br>**Kunche**: 524 density measurements have been taken for this deposit. Oxide material was assigned a density of 1.93t/$m^3$, transitional material was assigned a density of 2.37t/$m^3$ and fresh material was assigned a density of 2.75t/$m^3$.<br><br>**Bepkong**: Density values were obtained from Azumah. Oxide material was assigned a density of 2.21t/$m^3$, transitional material was assigned a density of 2.49t/$m^3$ and fresh material was assigned a density of 2.76t/$m^3$.<br><br>**Aduane**: 155 bulk density measurements have been taken within the oxide and transitional zones. Results returned 1.84 t/$m^3$ for strongly oxidised material and 2.49t/$m^3$ for weakly and moderately oxidised material was used. 2.75t/$m^3$ was used for fresh material. It was decided to use the Kunche densities as there was some issue were identified in the oxide and transition results. 1.93t/$m^3$ was assigned for the oxide, transitional material was assigned a density of 2.37t/$m^3$ and fresh material was assigned a density of 2.75t/$m^3$.<br><br>**Julie**: A bulk density database consisting of 738 dry bulk density determinations has been supplied for this deposit. The database has been subdivided into oxide, transition and fresh material allowing a mean dry bulk density to be calculated for each. On this basis, oxide material was assigned a density of 2.15t/$m^3$, transitional material was assigned a density of 2.52t/$m^3$ and fresh material was assigned a density of 2.74t/m3.<br>**Collette**: There has been no bulk density data collected from the Collette deposit. Oxide material was assigned a density of 2.0t/$m^3$, transitional material was assigned a density of 2.4t/$m^3$ and fresh material was assigned a density of 2.7t/$m^3$. Bulk densities values are based on similar deposits and rock types in the region.<br><br>**Julie NW, Danyawu, Alpha/Bravo, Josephine** and **Manwe** used the old Julie bulk densities of oxide 2.05t/$m^3$, transition 2.45t/$m^3$ and primary of 2.75t/$m^3$.<br><br>**Kunche NW** and **Yagha** used Kunche bulk densities of oxide 1.93t/$m^3$, transition 2.37t/$m^3$ and primary of 2.75t/$m^3$.No detailed assumptions regarding possible waste and process residue disposal options were made. |

| Criteria | JORC Code explanation | Commentary |
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| | | Subsequent pre-feasibility and feasibility work has confirmed that mining waste and processing residue can be safely and efficiently placed in adjacent waste dumps and nearby tailings dam. |
| Bulk density | The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit. Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. | In-situ dry bulk densities were determined using the water displacement method on wax coated half core samples. An electronic precision balance was used to weigh the samples and standard industry procedures were followed.<br><br>In-situ dry bulk densities were determined using the water displacement method on wax coated half core samples. An electronic precision balance was used to weigh the samples and standard industry procedures were followed.<br><br>**Kunche**: 524 density measurements have been taken for this deposit. Oxide material was assigned a density of 1.93t/m$^3$, transitional material was assigned a density of 2.37t/m$^3$ and fresh material was assigned a density of 2.75t/m$^3$.<br><br>**Bepkong**: Density values were obtained from Azumah. Oxide material was assigned a density of 2.21t/m$^3$, transitional material was assigned a density of 2.49t/m$^3$ and fresh material was assigned a density of 2.76t/m$^3$.<br><br>**Aduane**: 155 bulk density measurements have been taken within the oxide and transitional zones. Results returned 1.84 /m$^3$ for strongly oxidised material and 2.49t/m$^3$ for weakly and moderately oxidised material was used. 2.75t/m$^3$ was used for fresh material. It was decided to use the Kunche densities as there was some issue were identified in the oxide and transition results. 1.93t/m$^3$ was assigned for the oxide, transitional material was assigned a density of 2.37t/m$^3$ and fresh material was assigned a density of 2.75t/m$^3$.<br><br>**Julie**: A bulk density database consisting of 738 dry bulk density determinations has been supplied for this deposit. The database has been subdivided into oxide, transition and fresh material allowing a mean dry bulk density to be calculated for each. On this basis, oxide material was assigned a density of 2.15t/m$^3$, transitional material was assigned a density of 2.52 /m$^3$ and fresh material was assigned a density of 2.74 /m$^3$.<br>**Collette**: There has been no bulk density data collected from the Collette deposit. Oxide material was assigned a density of 2.0t/m$^3$, transitional material was assigned a density of 2.4t/m$^3$ and fresh material was assigned a density of 2.7t/m$^3$. Bulk densities values are based on similar deposits and rock types in the region.<br><br>**Julie NW, Danyawu, Alpha/Bravo, Josephine** and **Manwe** used the old Julie bulk densities of oxide 2.05t/m$^3$, transition 2.45t/m$^3$ and primary of 2.75t/m$^3$.<br><br>**Kunche NW** and **Yagha** used Kunche bulk densities of oxide 1.93t/m$^3$, transition 2.37t/m$^3$ and primary of 2.75t/m$^3$. |
| | Discuss assumptions for bulk density estimates used in the evaluation process of the different materials. The bulk density for bulk material must have been | The bulk density values were assigned to each model cell according to the state of oxidation. In-situ dry bulk densities were determined using the water displacement method on wax coated half core samples. An electronic precision balance was |

| Criteria | JORC Code explanation | Commentary |
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| | measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit. | used to weigh the samples and standard industry procedures were followed. |
| | The basis for the classification of the Mineral Resources into varying confidence categories. Discuss assumptions for bulk density estimates used in the evaluation process of the different materials. | The Mineral Resource is classified as a combination of Measured, Indicated and Inferred. All blocks within all mineralisation envelopes were classified. The bulk density values were assigned to each model cell according to the state of oxidation. |
| Classification | Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).The basis for the classification of the Mineral Resources into varying confidence categories. | The Mineral Resources were classified based upon drill hole spacing, quality of sampling and sample analyses, quantity of density measurements, and the relative confidence in the geological interpretation<br>**Kunche:** Drill holes supporting the Measured Mineral Resource are drilled at a spacing of 25m (N) x 25m (E). The Indicated Mineral Resource is supported at a drill spacing of between 25m (N) x 25m (E) and 50m (N) x 50m (E). The Inferred Mineral Resource is supported by drilling with drill spacing typically greater than 50m (northing and easting).<br>**Bepkong:** was classified as a combination of Measured, Indicated and Inferred. The Measured Mineral Resource sits in the near surface core of the largest domains with a drill hole spacing of better than 25m x 25m, with an outer crust of Indicated. Classification was applied on a domain by domain basis. Inferred Mineral Resources were confined to depth extents of domains with limited sample support, or those domains with one or two drill holes penetrating them.<br>**Aduane:** The Indicated Mineral Resource is supported at a drill spacing of 25m (N) x 25m (E). The Inferred Mineral Resource is supported by drilling with drill spacing typically greater than 25m (northing and easting).<br>**Julie**: Drill holes supporting the Measured Mineral Resource are drilled at a spacing of 25m (N) x 25m (E). The Indicated Mineral Resource is supported at a drill spacing of between 25m (N) x 25m (E) and 50m (N) x 50m (E). The Inferred Mineral Resource is supported by drilling with drill spacing typically greater than 50m (northing and easting). Domains with between 1 and 3 holes intercepting the domain are classified as Inferred.<br>**Julie West** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within areas of close spaced RC drilling of less than 20m by 20m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 20m by 20m.<br>**Danyawu** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within areas of close spaced RC drilling of less than 20m by 20m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 20m by 20m.<br>**Josephine** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within |

| Criteria | JORC Code explanation | Commentary |
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| | | areas of close spaced RC drilling of less than 25m by 25m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 25m by 25m.<br>**Manwe** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within areas of close spaced RC drilling of less than 25m by 25m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 20m by 20m.<br>All material has been classified as inferred at **Alpha/ Bravo, Kunche NW** and **Yagha**. Infill drilling is required to increase the confidence levels.<br>The results reflect the Competent Person's views of the deposits. The Mineral Resource is classified as a combination of Measured, Indicated and Inferred. All blocks within all mineralisation envelopes were classified. |
| | Whether the result appropriately reflects the Competent Person's view of the deposit. Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data). | The Mineral Resource estimate classification appropriately reflects the view of the applicable Competent Person. The Mineral Resources were classified based upon drill hole spacing, quality of sampling and sample analyses, quantity of density measurements, and the relative confidence in the geological interpretation<br>**Kunche:** Drill holes supporting the Measured Mineral Resource are drilled at a spacing of 25m (N) x 25m (E). The Indicated Mineral Resource is supported at a drill spacing of between 25m (N) x 25m (E) and 50m (N) x 50m (E). The Inferred Mineral Resource is supported by drilling with drill spacing typically greater than 50m (northing and easting).<br>**Bepkong:** was classified as a combination of Measured, Indicated and Inferred. The Measured Mineral Resource sits in the near surface core of the largest domains with a drill hole spacing of better than 25m x 25m, with an outer crust of Indicated. Classification was applied on a domain by domain basis. Inferred Mineral Resources were confined to depth extents of domains with limited sample support, or those domains with one or two drill holes penetrating them.<br>**Aduane:** The Indicated Mineral Resource is supported at a drill spacing of 25m (N) x 25m (E). The Inferred Mineral Resource is supported by drilling with drill spacing typically greater than 25m (northing and easting).<br>**Julie**: Drill holes supporting the Measured Mineral Resource are drilled at a spacing of 25m (N) x 25m (E). The Indicated Mineral Resource is supported at a drill spacing of between 25m (N) x 25m (E) and 50m (N) x 50m (E). The Inferred Mineral Resource is supported by drilling with drill spacing typically greater than 50m (northing and easting). Domains with between 1 and 3 holes intercepting the domain are classified as Inferred.<br>**Julie West** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within areas of close spaced RC drilling of less than 20m by 20m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 20m by 20m. |

| Criteria | JORC Code explanation | Commentary |
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| | | **Danyawu** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within areas of close spaced RC drilling of less than 20m by 20m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 20m by 20m.<br>**Josephine** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within areas of close spaced RC drilling of less than 25m by 25m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 25m by 25m.<br>**Manwe** was classified as a combination of Indicated and Inferred. The Indicated Mineral Resource was defined within areas of close spaced RC drilling of less than 25m by 25m, and where the continuity and predictability of the lode positions was good. The Inferred Mineral Resource was assigned to areas of the deposit where drill hole spacing was greater than 20m by 20m.<br>All material has been classified as inferred at **Alpha/ Bravo, Kunche NW** and **Yagha**. Infill drilling is required to increase the confidence levels.<br>The results reflect the Competent Person's views of the deposits. |
| | The results of any audits or reviews of Mineral Resource estimates. Whether the result appropriately reflects the Competent Person's view of the deposit. | Extomine's resource estimates were subject to internal check lists and reviews.<br>The Resources of Kunche, Aduane are updates on the 2013 Mineral Resource with addition drilling.<br>The Resources of Julie West and Danyawu are updates on the 2016 Mineral Resource with addition drilling.<br>The Alpha/Bravo, Josephine, Manwe, Kunche NW and Yagha are all new Mineral Resource estimates.<br>The Julie Mineral Resource estimate was reviewed by a CSA Global resource geologist as part of the CSA Global peer review process. The Mineral Resource is an update to the 2013 Mineral Resource with the 2013 domains used as a basis, with modifications based upon additional drilling or slight adjustments to existing domain boundaries where considered prudent.<br>The Collette Mineral Resource estimate has not been updated: it is the original 2011 MRE.<br>The Bepkong Mineral Resource estimate has not been updated: it is the original 2013 MRE.<br>No external reviews have taken place. The Mineral Resource estimate classification appropriately reflects the view of the applicable Competent Person. |
| Audits or reviews | Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. | The relative accuracy of the Mineral Resource estimate is reflected through classification of the Mineral Resources in accordance with the 2012 JORC Code.<br>The geological interpretation supporting the Mineral Resource has sufficient width, strike extent and depth extent to minimise |

| Criteria | JORC Code explanation | Commentary |
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| | For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. The results of any audits or reviews of Mineral Resource estimates. | geological risk in the interpretation of the geological envelopes.<br><br>The classification of the Mineral Resource is a fair and reasonable representation of the relative accuracy in grade distribution and the geological domains as modelled. Extomine's resource estimates were subject to internal check lists and reviews.<br><br>The Resources of Kunche, Aduane are updates on the 2013 Mineral Resource with addition drilling.<br><br>The Resources of Julie West and Danyawu are updates on the 2016 Mineral Resource with addition drilling.<br><br>The Alpha/Bravo, Josephine, Manwe, Kunche NW and Yagha are all new Mineral Resource estimates.<br><br>The Julie Mineral Resource estimate was reviewed by a CSA Global resource geologist as part of the CSA Global peer review process. The Mineral Resource is an update to the 2013 Mineral Resource with the 2013 domains used as a basis, with modifications based upon additional drilling or slight adjustments to existing domain boundaries where considered prudent.<br><br>The Collette Mineral Resource estimate has not been updated: it is the original 2011 MRE.<br><br>The Bepkong Mineral Resource estimate has not been updated: it is the original 2013 MRE.<br><br>No external reviews have taken place. |
| Discussion of relative accuracy/ confidence | The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate. | The statement refers to global estimation of tonnes and grade. The relative accuracy of the Mineral Resource estimate is reflected through classification of the Mineral Resources in accordance with the 2012 JORC Code.<br><br>The geological interpretation supporting the Mineral Resource has sufficient width, strike extent and depth extent to minimise geological risk in the interpretation of the geological envelopes.<br><br>The classification of the Mineral Resource is a fair and reasonable representation of the relative accuracy in grade distribution and the geological domains as modelled. |
| | These statements of relative accuracy and confidence of the estimate should be compared with production data, where available. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include | No production has occurred. The statement refers to global estimation of tonnes and grade. |

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| | assumptions made and the procedures used. | |

*Section 4 Estimation and Reporting of Ore Reserves*

| Criteria | Explanation | Commentary |
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| Mineral Resource estimate for conversion to Ore Reserves | Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.<br>Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves. | The Mineral Resource Estimate used as a basis for the conversion to the Ore Reserve was provided on 4th September 2018 with Mr Mark Glassock from Extomine Pty Ltd as the Competent Person for the majority of the resources excluding Julie which was prepared by Mr David Williams from CSA Global.<br>The total Mineral Resource of 49.2Mt at 1.6g/t Au included 12.5Mt of Measured material at 1.7g/t Au, 16.3Mt of Indicated material at 1.8g/t Au and 28.8Mt of Inferred material at 1.4g/t Au.<br>These resources were based on deposits which collectively reside in the Kunche and Julie areas. The cut-off grades used to report the above resource were 0.5g/t Au for all Kunche deposits (Wa-Lawra), 0.5g/t Au for Julie and Collette (Wa-East), and 1.0g/t Au for other Wa-East deposits.<br>The impact of artisanal mining is not significant and no allowances have been made.<br>The Mineral Resources are reported inclusive of the Ore Reserves. |
| Site visits | Comment on any site visits undertaken by the Competent Person and the outcome of those visits. | The Competent Person (Mr Steve Craig) has visited the proposed mining site of the project in 12 – 18th July and 17 – 18th November 2018. The following observations were incorporated:<br>• The project is made up of a number of sites centred around Kunche (Kunche, Bepkong and Aduane) and Julie (Julie, Julie West, Danyawu, Manwe, and Josephine). All sites were visited during the site visits.<br>• The Kunche project area is located approximately 45km north of the regional township of Wa. The Julie projects are located approximately 70km to the south east of Kunche. Access to the project is via a tarmac road from Kumasi and Accra.<br>• All sites are accessible with grid power available at Kunche and whilst the Julie sites are accessible, they will require a purpose-built haulage road to ensure ore can be delivered in a timely fashion at the desired production rates from the Julie site to the mill which will be located at Kunche.<br>• The topography in and around the sites can be considered generally flat with some minor topographical relief. |

| Criteria | Explanation | Commentary |
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| Study status | The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.<br>The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered. | Ibaera Capital have formed a joint venture with Azumah Resources Limited ("Azumah") to review the existing 2014 Feasibility Study for the Wa Gold Project which is 100% owned by Azumah Resources Ghana Limited.<br>This report is published as a Feasibility Study Update ("FS Update") which includes updated drilling, additional resources, a review of all material costs and optimisation modifying factors (including mining, processing and G&A costs), metallurgical testwork and the development of an optimised mine plan. Based on that information, the conclusions of the various specialist consultants are that the project is technically achievable and economically viable.<br>The specialist consultants that provided inputs were Extomine Pty Ltd (geology & resources), CSA Global (geology & resources), Orelogy Consulting Pty Ltd (mine planning) and Minnovo Pty Ltd (metallurgical testwork process design and processing and capital costs.)<br>The FS Update was underpinned by an optimised mine plan focusing on processing higher grade ore earlier in the mine life and with Julie fresh ore being stockpiled and processed on a campaign basis.<br>The mine plan produces gold ore onsite from a conventional CIL process plant located adjacent to the Kunche deposit. An additional fine grinding/float circuit is added when Julie fresh ore will be mined.<br>The mine planning activities included open pit optimisation, final and interim stage pit designs, mine scheduling, and mining cost estimations. Modifying factors considered during the mine planning process included mining dilution and ore loss, slope design criteria and practical mining considerations.<br>The activities and findings of all other disciplines were summarised in the FS Update document, and detail derivation of other modifying factors such as processing recoveries, costs, revenue factors, environmental and social. Overall the results of the FS Update demonstrate that the Wa Gold Project is technically achievable and economically viable. |
| Cut-off parameters | The basis of the adopted cut-off grade(s) or quality parameters applied. | Only Measured and Indicated resource materials were considered as eligible for conversion to ore material.<br>The processing cost was dependent on oxidation state, hardness and distance from the Kunche process facility. Therefore, a variable cut-off grade was applied at the block level both during pit optimisation and ore definition for scheduling. The "breakeven cut-off grade" was determined to be between 0.31g/t Au for oxide material at Bepkong to 0.89g/t Au for primary ore at Julie.<br>No other quality parameters were applied during the Ore Reserve estimation. |
| Mining factors or assumptions | The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design). | As part of the FS Update, a detailed mine design and monthly/quarterly mining schedule was produced. This study indicated that:<br>• The Ore Reserve derived from the Mineral Resource can easily meet the processing feed requirements for the production targets of the project.<br>• The ore is accessible by conventional open pit mining methods over an 8-year mining life.<br>• The pit optimisation, design and schedule process indicate a project life of approximately 11 years at an average processing rate of approximately 1,640,000t per annum. |

| Criteria | Explanation | Commentary |
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| | | • Overall total "life-of-mine" mining costs are $2.94/t mined, or $3.59/t mined if all costs related to the road haulage from Julie to Kunche are also included. |
| | The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc. | A conventional open pit mine method was chosen as the basis of the FS Update with all ore being processed and all waste being placed within a waste dump. There will be opportunities to backfill certain pits, but this will need additional deeper drilling to ensure deeper ore is not sterilised.<br>The ore production schedule assumes Kunche is mined first with initial pre-stripping over a 6-month period to provide mine waste for infrastructure and construction purposes. Construction of the fine grind circuit and the ore haul road will commence in Year 2 of the project with first ore from Julie being processed towards the end of Year 2. All ore will be hauled to Kunche using 41 tonne capacity standard road trains and will be stockpiled at Kunche in a number of off-ROM stockpiles based on grade and oxidation state. Short term blending will occur on the ROM to ensure production rates through the mill can be maintained.<br>The mining rates are accelerated to complete the mine as soon as possible to minimise mining fixed costs. Hence ore is stockpiled and all Julie fresh ore is campaigned once there is at least 1 month of Julie fresh ore available at the ROM.<br>Mine design criteria include minimum mining width, ramp width and gradient, pit exit location and slope design parameters. |
| | The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc.), grade control and pre-production drilling. | Additional geotechnical investigation completed for the FS Update included drilling at Julie and UCS testing of core samples. All geotechnical parameters were reviewed by Peter O'Bryan & Associates to provide an updated set of geotechnical parameters for both the pit optimisation and mine designs components.<br>The grade control drilling is planned as campaigns in advance of mining using RC drilling methods. The grade control program will aim to define the economic ore boundary and the delineation of the ore boundary during mining operations will utilise survey control.<br>At least three fingers will be built on the ROM and will be built using chevron stacking via end tipping and then reclaimed from the side in an-echelon fashion to manage short interval grade variations and ensure grade distribution within each finger is smoothed as much as practicable. |

| Criteria | Explanation | Commentary |
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| | The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate). | The August 2018 package of models by Mark Glassock from Extomine Pty Ltd were used as a basis for the conversion of the Ore Resource to the Ore Reserve. Included in this package was the Julie model which was developed by David Williams from CSA Global.<br>Bench heights are nominated at 5.0m with flitches every 2.5m. These parameters minimised slope errors during the optimisation process and variable batter slope and berm configurations were developed for each resource depending on the rock mass qualities.<br>Only Measured and Indicated material were categorised as ore for the optimisation process. Inferred mineralisation was treated as waste. |
| | The mining dilution factors used. | Dilution and ore losses were modelled based on a function of the orebody geometry, block size and mining method. At the margin of the ore zone, ore and waste are mixed as a function of the loading equipment and the bench height. Hence, dilution occurs at the margins and ore losses are due to waste material diluting ore blocks and reducing the overall grade of the block so that it then is below the economic cut-off grade. The dilution and ore losses vary depending on the model and finally a diluted model is presented to the optimisation routine, mine scheduling and for ore reserve reporting.<br>Dilution varies from 4.1% to 45.7% with an average of 16.5%. Ore losses vary from 1.7% to 24.4% with an average of 7.9%. |
| | The mining recovery factors used. | No further mining recovery factors were applied. |
| | Any minimum mining widths used. | Pit designs and interim cutbacks have been designed to suit a 120t excavator and 90t payload dump trucks. The parameters used were:<br>• A minimum mining width of 20m.<br>• Dual-lane ramp width of 24m and single-lane ramp width of 14m.<br>• Ramp gradient 10%.<br>Minimum mining widths were also applied at the pit optimisation stage to ensure an appropriate starting point for mine design purposes. |
| | The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion. | No inferred Mineral Resources have been included in the Ore Reserves or the associated production schedule. However, there is ~480kt of inferred material within the mine designs that is currently defined as waste and NOT included in the Ore Reserve. |
| | The infrastructure requirements of the selected mining methods. | The FS Update considers the proposed open cut mine plan and schedule, and includes waste and overburden removal, ROM pads based at the two sites, haul roads to process plant, haulage loading facilities, water management, workshops, administration buildings, traffic management and other associated mine and facility infrastructure.<br>It is planned to conduct mining on a mine contract basis for the life of mine. |
| Metallurgical factors or assumptions | The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.<br>Whether the metallurgical process is well-tested technology or novel in nature. | The metallurgical process proposed is conventional gold extraction by CIL for all Kunche and Bepkong ores and for Julie oxide and some transition ore. Julie primary and remaining transition ores (comprising 20% of the total Ore Reserve) require bulk sulphide flotation with re-grinding of concentrate and intensive leaching of the float tails. |

<table>
<tr><th>Criteria</th><th>Explanation</th><th>Commentary</th></tr>
<tr><td></td><td>The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.<br><br>Any assumptions or allowances made for deleterious elements.<br><br>The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole<br><br>For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet specifications?</td><td>Extensive metallurgical test work has been undertaken on oxide, transition and primary mineralisation domains for the Kunche, Bepkong and Julie deposits and included:<br><br>• Comprehensive head analysis.<br>• Comminution.<br>• Gravity concentration.<br>• Direct cyanide leaching.<br>• Carbon kinetics.<br>• Thickening.<br>• Rheology.<br>• Oxygen uptake.<br>• Cyanide detoxification.<br>• Variability testing.<br><br>Additional test work for Julie ore includes:<br><br>• Bulk sulphide flotation.<br>• Ultra-fine grinding (UFG) of concentrate.<br>• Cyanide leaching of UFG flotation concentrate<br>• Cyanide leaching of flotation tailings.<br>• QEM*SCAN® analysis of Julie products<br><br>Metallurgical domaining is into oxides, transition and primary mineralisation as defined in the Mineral Resource models.<br><br>A review of the test work by Minnovo outlined that the process recovery is as follows:<br><br><table><tr><th></th><th>Oxide</th><th>Transitional</th><th>Fresh</th></tr><tr><td>Kunche</td><td>94.3%</td><td>91.1%</td><td>89.7%</td></tr><tr><td>Bepkong</td><td>93.3%</td><td>93.3%</td><td>93.0%</td></tr><tr><td>Julie</td><td>90.8%</td><td>90.8%</td><td>90.0%</td></tr></table></td></tr>
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| Criteria | Explanation | Commentary |
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| Environmental | The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported. | A detailed social and environmental assessment, leading to a formal Environmental Impact Assessment (EIA) has been completed by SAL Consult of Ghana and Azumah personnel. This included the following base line studies:<br>• Socio-Economic.<br>• Archaeological and Heritage.<br>• Noise.<br>• Air Quality.<br>• Hydrological.<br>• Hydrogeological.<br>• Fauna and Flora.<br>• Freshwater Ecology<br>• Public Health<br>There has been extensive public consultation and discussions with the Environmental Protection Agency (EPA) of Ghana and this is continuing.<br>All likely environmental and social impacts associated with the Project have been identified and assessed and no issue has been identified that cannot be mitigated or managed to an acceptable degree.<br>Waste rock geochemistry investigations have been undertaken by Knight Piesold and testing of waste rock samples from the Kunche, Bepkong and Julie deposits indicates that none of the waste rock samples tested is acid generating, with the majority of samples being non-acid generating with a high degree of excess neutralising capacity. Management of surface run-off and seepage from the waste dumps and pit walls during operation is required and final waste dumps will be capped with suitable materials to minimise water infiltration.<br>Environmental Impact Statements for both mining areas have been submitted to the Ghana EPA and Public Forums held as a prelude to the issue of an EPA Operating Permit.<br>No communities are required to be relocated to enable operations to proceed |
| Infrastructure | The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided or accessed. | The project is located to north of WA, which is the major regional city and has access to excellent communications and a sealed airstrip.<br>Both a sealed road and a 161kV power line are located within 3 km of the proposed process facility and there is approval to extract water from the Black Volta River which is only 3 km to the west of the process plant.<br>Discussions with local road authorities is ongoing regarding the use or upgrading of existing public roads, with new diversions around settlements or for short cuts, for the haulage road from Julie to the Kunche plant. |

| Criteria | Explanation | Commentary |
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| Costs | The derivation of, or assumptions made, regarding projected capital costs in the study.<br>The methodology used to estimate operating costs.<br>Allowances made for the content of deleterious elements.<br>The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co- products.<br>Derivation of transportation charges.<br>The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.<br>The allowances made for royalties payable, both Government and private. | Project costs (capital, operating, consumables, labour, freight etc) have been identified, assessed and calculated by the various consultants and compiled by Minnovo for this FS Update report. The study contributors include: Orelogy Consulting Pty Ltd (mine development and mining operations) and Minnovo (process plant and processing operations, non-process infrastructure).<br>Fuel and explosives costs have been derived separately and costed from first principles. The fuel price of $1.005/litre is based on current oil prices and is based on the National Petroleum Authority build-up which includes all allowances for taxes and levies as well as the base ex-refinery price of $0.582/litre.<br>Mining costs were derived from updated mine contractor pricing studies and were substantiated with a shadow-bid process. These groups have utilised detailed studies, indexed prices, public reference prices etc to calculate the various costs used as inputs into the FS Update.<br>All mining recovery, metallurgical recovery and other technical concerns regarding the commodity price for Au have been considered by appropriately qualified individuals and groups in respect to the FS Update requirements.<br>Under the operations and financial modelling, full allowances are made for state royalties, duties, taxes, compensation etc. The project financial model details the particular financial cost, the percentage and the amount. A 5.0% government royalty has also been included in line with current law.<br>All revenues are based on US dollars and up-to-date exchange rates have also been used where necessary.<br>There are no deleterious elements to affect costs. |
| Revenue factors | The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.<br>The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products. | The mine plan was based on economic shells through open pit optimisation using a gold price of US$1,300/ ounce and an exchange rate of 0.75 USD/AUD where required.<br>In most cases a revenue factor of 1.00 was used for pit design purposes.<br>The pit optimisation studies show project upside and an overall improvement in economics with a potential increase in mine life when using higher prices, inclusion of inferred material or lower mining and processing costs.<br>There is no other revenue associated with any co-product or by-product. |
| Market assessment | The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.<br>A customer and competitor analysis along with the identification of likely market windows for the product.<br>Price and volume forecasts and the basis for these forecasts. | The market for gold is well established and liquid. However, the price does fluctuate considerably, hence a price needs to be selected for planning purposes.<br>The FS Update was developed using a gold price of US$1,300/oz and for consistency, the FS Update has also adopted this price.<br>There has been no formal assessment or forecast for the gold price by either Azumah and/or Ibaera. |

| Criteria | Explanation | Commentary |
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| Economic | The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.<br>NPV ranges and sensitivity to variations in the significant assumptions and inputs. | Ibaera engaged Model Answer Commercial Analytics Pty Ltd to conduct the financial modelling. The Wa Gold FS Update financial model provides for an array of project assumptions, including costs, grade variations, production variation, exchange rates, and other information.<br>The Mineral Resource estimation, completed by both Extomine and CSA Global, and mining schedule, completed by Orelogy Consulting Pty Ltd, are of sufficient technical standard and level of accuracy taking into account all mining and associated activities and contingencies.<br>The financial summary and base case NPV demonstrates a positive result. Sensitivities and discounting ranges have been applied to understand the economic tolerance to various key inputs to the base case. The sensitivities are generally ±20% and despite this, the financial result still demonstrates a positive economic case and profit margin to support the development of the Wa Gold Project. |
| Social | The status of agreements with key stakeholders and matters leading to social licence to operate. | Consultation with key stakeholders and all residents and focus group discussions continue in an effort to keep all groups informed. Information on the Project and potential impacts are distributed to stakeholders both locally and nationally.<br>Based on previous investigations, the Project as it currently stands will not require the resettlement of any villages. Azumah will make compensation payments to all affected farmers in accordance with Ghana law and in consultation with local administrators and will encourage them to continue their farming activities on land not directly required by the Project.<br>The Project will require the relocation of a number of sacred shrines and burial sites. None of the sites are considered to be of national or international significance and, with respect to local customary practices and the implementation of traditional practices, these can be relocated.<br>Project has wide-ranging local and national support and will create a significant number of jobs and enhancement of local and regional skills. There is no other major industry in the region. |
| Other<br>To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves. | Any identified material naturally occurring risks.<br>The status of material legal agreements and marketing arrangements.<br>The status of government agreements and approvals critical to the viability of the project, such as mineral tenement status and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study.<br>Highlight and discuss the materiality of any unresolved matter that is dependent on a third part on which extraction of the reserve is contingent. | There are no obvious or likely naturally occurring risks that have been identified or which may negatively impact the Project or Project area.<br>There are no material legal or marketing agreements.<br>All statutory government agreements, permits and approvals commensurate to the current status of the project are all current and in good order.<br>The government of Ghana in August 2014 approved the issue of two 15-year Mining Leases over both areas containing all the Ore Reserves. The EIS was submitted in late 2017/early 2018 and no objections have been raised by stakeholders to date. |

| Criteria | Explanation | Commentary |
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| Classification | The basis for the classification of the Ore Reserves into varying confidence categories. Whether the result appropriately reflects the Competent Person's view of the deposit. The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any). | Proved and Probable Ore Reserves were determined from mineralisation classified as either Measured or Indicated Resource. This classification is reasonable<br>The risks associated with the orebody variability appear much lower than other project risks (such as price, exchange rate and recovery) that effect revenue directly.<br>Approximately 65% of the Ore Reserves are classified as Proved and 35% are classified as Probable. |
| Audits or reviews | The results of any audits or reviews of Ore Reserve estimates. | |
| Discussion of relative accuracy/ confidence | Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.<br>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.<br>Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.<br>It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available. | The Mineral Resource, and hence the associated Ore Reserve, relate to global estimates.<br>The Ore Reserve estimate is an outcome of the January 2019 FS Update with geological, mining, metallurgical, processing, engineering, marketing and financial considerations to allow for the cost of finance and tax. Engineering and cost estimations have been done to a ±30% level of accuracy, consistent with a FS Update of this nature.<br>An NPV and IRR was estimated by Model Answer Commercial Analytics Pty Ltd demonstrating the positive economics associated with the project.<br>However, there is no guarantee that the price assumption, while reasonable, will be achieved. |

| Criteria | Explanation | Commentary |
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| Audits or reviews | The results of any audits or reviews of Ore Reserve estimates. | The Ore Reserve estimate has been reviewed internally by Orelogy Consulting Pty Ltd. The FS Update Ore Reserve is:<br>• **Proved – 11.6 Mt at 1.6g/t Au for 597,000 ounces**<br>• **Probable – 6.4 Mt at 2.1g/t Au for 431,000 ounces**<br>• **Total – 18 Mt at 1.8g/t Au for 1,028,000 contained ounces**<br>Note these have been rounded.<br>No external reviews or audits have been undertaken on the Ore Reserve estimate. |
| Discussion of relative accuracy/ confidence | Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.<br>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.<br>Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.<br>It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available. | The Mineral Resource, and hence the associated Ore Reserve, relate to global estimates.<br>The Ore Reserve estimate is an outcome of the January 2019 FS Update with geological, mining, metallurgical, processing, engineering, marketing and financial considerations to allow for the cost of finance and tax. Engineering and cost estimations have been done to a ±30% level of accuracy, consistent with a FS Update of this nature.<br>An NPV and IRR was estimated by Model Answers Commercial Analytics Pty Ltd demonstrating the positive economics associated with the project.<br>However, there is no guarantee that the price assumption, while reasonable, will be achieved. |