

**PRESS RELEASE**

30 March 2020

**ASX/TSX: CDV**

2020-08

## COMPANY UPDATE

Advanced West African gold developer, Cardinal Resources Limited (**Cardinal** or **Company**) (ASX:CDV, TSX:CDV), is pleased to provide a corporate update to shareholders and commentary as to how the Company is managing the current COVID-19 pandemic.

### **Nordgold**

The Company advises that further to the press release dated 16 March 2020, the Company is working constructively with Nordgold. A confidentiality agreement has been executed with Nordgold and the Company has provided Nordgold with full access to the Cardinal data room to allow Nordgold to complete its due diligence as requested.

It should be noted that whilst Nordgold has already acquired a 19.9% interest in the Company's shares, it has not made any formal offer to Cardinal. Cardinal will advise shareholders if a formal offer is received from Nordgold or there are any other material developments.

### **Sprott Loan Facility**

On 27 February 2020, Cardinal announced that it had repaid US\$8.0 million to Sprott Private Resources Lending (Collector), L.P. (**Sprott**). Given the unexpected downturn in global equity markets and uncertainties as a result of the COVID-19 pandemic, the Company has executed an agreement to redraw US\$5.0 million from Sprott. The US\$5.0 million may be redrawn by Cardinal in two equal tranches, with funding for the first tranche expected to be received imminently.

As consideration for the redraw, Cardinal has agreed to pay a redraw fee as well as apply a 5% redemption premium on all future repayments of the facility. The material terms (including interest rate) of the Credit Agreement with Sprott remain otherwise unchanged.

Upon completion of the redraw of the entire USD\$5.0 million facility, the loan position will be approximately US\$24 million. With current cash of AU\$3.2 million, and redraw of the entire facility being approximately AU\$8.4 million (US\$5.0 million), Cardinal will have approximately A\$11.6 million cash and facilities (excluding fees). The Company reasonably expects the Loan Facility will be fully repaid prior to the maturity date of 1 March 2021.

### **Personnel and Wellbeing**

Following advice from the World Health Organization (**WHO**) and the Australian, Ghanaian and Canadian Governments, Cardinal has enacted changes to its exploration programme primarily focused on the safety and wellbeing of our workforce.

All international travel has been suspended, while on the ground in Ghana, the workforce has been reduced to key personnel only. According to WHO Situation Report 68 (28 March 2020), there had been 138 confirmed cases of Covid-19 in Ghana, including cases via local transmission. Four (4) deaths from Covid-19 have been recorded in Ghana.

While fieldwork has been scaled back for at least the next four weeks, the Namdini project team is still actively working on adding value to the project. In February, the Company was awarded key water

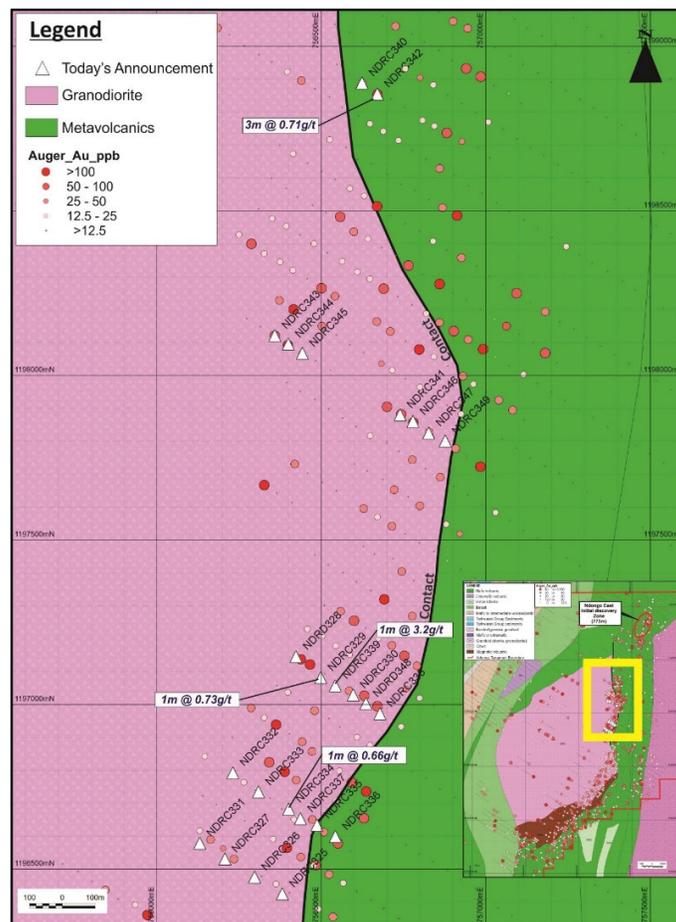
extraction permits, while earlier this month, the Government approved our Resettlement Action Plan, which will have significant health and wellbeing benefits for our local community. Further, the company announced the approval of the Namdini Mining Licence expansion from 19km<sup>2</sup> to 63km<sup>2</sup> (ASX/TSX press release “26 March 2020 Cardinal Expands Namdini Mining Licence Area”).

**Regional Exploration Update**

First pass limited drilling to test one of the newly identified targets at Ndongo was completed with no mineralisation of economic potential intersected. Even though this very limited scout drilling has not returned economic mineralisation, recognisable altered, silicified, sulphidic zones were intersected and provide confidence in the potential for additional drilling.

The first pass scout drilling programme of 23 shallow RC holes with 2 diamond tails was completed to test Target Zone 2 at Ndongo (Figure 1 & Tables 1 and 2 in Schedule 1). Drilling comprised 1,960m of RC and 244.07m of core, totaling approximately 2,203.57m.

The drilling encountered zones of variable chlorite-silica-carbonate-sericite alteration with sulphides (mainly pyrite with very minor arsenopyrite). Results were intermittent including 3m @ 0.7g/t Au in NDRC342, 1m @ 3.2g/t Au in NDRC339, 1m @ 0.7g/t Au in NDRC329 and 1m @ 0.7g/t Au in NDRC334 (Figure 1). Geological interpretation is ongoing and this process will incorporate all new assay results, geophysical dataset and geochemical data analysis for further targeting.



**Figure 1: Ndongo Target 2 Drill Locations**

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## ABOUT CARDINAL

Cardinal Resources Limited (ASX/TSX: CDV) is a West African gold-focused exploration and development Company that holds interests in tenements within Ghana, West Africa. Cardinal is readying for development of the world-class Namdini Gold Project located in Northern Ghana, subject to concluding project development financing. Once developed, the Namdini Gold Project is expected to produce over 360,000 ounces per annum for the first two years of operation and over the life of mine is expected to produce an average of 287,000 ounces per annum. The Definitive Feasibility Study completed in late 2019, indicated compelling economics, including a post-tax NPV<sub>5</sub> of over US\$958 million which is capable of generating over US\$1.55 billion in undiscounted project cashflow (assuming a gold price of US\$1,550/oz).

The Company is focused on the development of the Namdini Project, for which the Company has published a gold **Ore Reserve of 5.1Moz** (138.6 Mt @ 1.13 g/t Au; 0.5 g/t cut-off), inclusive of 0.4Moz Proved (7.4 Mt @ 1.31 g/t Au; 0.5 g/t cut-off) and 4.7Moz Probable (131.2 Mt @ 1.12 g/t Au; 0.5 g/t cut-off).

The Company announced completion of the Definitive Feasibility Study (DFS), which was released 28 October 2019. The technical report on the DFS, prepared in accordance with NI 43-101 of the Canadian Securities Administrators, was issued on SEDAR at [www.sedar.com](http://www.sedar.com) on 28 November 2019.

Cardinal confirms that it is not aware of any new information or data that materially affects the information included in its announcement of the Ore Reserve of 3 April 2019, its completed Feasibility of 28 October 2019 and the information on the drill results noted in this announcement. All material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed.

Authorised for release by the CEO/MD of Cardinal Resources Limited.

For further information contact:

**Archie Koimtsidis**  
CEO / MD  
Cardinal Resources Limited  
P: +61 8 6558 0573

**Alec Rowlands**  
IR / Corp Dev  
Cardinal Resources Limited  
P: +1 647 256 1922

**Cannings Purple**  
**Andrew Rowell or Peta Baldwin**  
E: [arowell@canningspurple.com.au](mailto:arowell@canningspurple.com.au)  
E: [pbaldwin@canningspurple.com.au](mailto:pbaldwin@canningspurple.com.au)

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## Competent / Qualified Person Statement

The information in this press release that relates to Exploration Results is based on information prepared by Mr. Paul Abbott, a full-time employee of Cardinal Resources, who is a member of the Geological Society of South Africa. Mr. Abbott has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and the activity which he is undertaking to qualify as a Competent Person, as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves".

The scientific and technical information in this announcement that relates to Exploration Results, Mineral Resources and Ore Reserves at the Namdini Gold Project has been reviewed and approved by Mr. Richard Bray, a Registered Professional Geologist with the Australian Institute of Geoscientists and Mr. Ekow Taylor, a Chartered Professional Geologist with the Australasian Institute of Mining and Metallurgy. Mr. Bray and

Mr. Taylor have more than five years' experience relevant to the styles of mineralisation and type of deposits under consideration and to the activity which is being undertaken to qualify as a Competent Person, as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" and as a Qualified Person for the purposes of NI43-101. Mr. Bray and Mr. Taylor are full-time employees of Cardinal and hold equity securities in the Company.

#### **Disclaimer**

This ASX / TSX press release has been prepared by Cardinal Resources Limited (ABN: 56 147 325 620) ("Cardinal" or "the Company"). Neither the ASX or the TSX, nor their regulation service providers accept responsibility for the adequacy or accuracy of this press release.

This press release contains summary information about Cardinal, its subsidiaries and their activities, which is current as at the date of this press release. The information in this press release is of a general nature and does not purport to be complete nor does it contain all the information, which a prospective investor may require in evaluating a possible investment in Cardinal.

By its very nature exploration for minerals is a high-risk business and is not suitable for certain investors. Cardinal's securities are speculative. Potential investors should consult their stockbroker or financial advisor. There are a number of risks, both specific to Cardinal and of a general nature which may affect the future operating and financial performance of Cardinal and the value of an investment in Cardinal including but not limited to economic conditions, stock market fluctuations, gold price movements, regional infrastructure constraints, timing of approvals from relevant authorities, regulatory risks, operational risks and reliance on key personnel and foreign currency fluctuations.

Except for statutory liability which cannot be excluded and subject to applicable law, each of Cardinal's officers, employees and advisors expressly disclaim any responsibility for the accuracy or completeness of the material contained in this press release and excludes all liability whatsoever (including in negligence) for any loss or damage which may be suffered by any person as a consequence of any information in this Announcement or any error or omission here from. Except as required by applicable law, the Company is under no obligation to update any person regarding any inaccuracy, omission or change in information in this press release or any other information made available to a person nor any obligation to furnish the person with any further information. Recipients of this press release should make their own independent assessment and determination as to the Company's prospects, its business, assets and liabilities as well as the matters covered in this press release.

#### **Forward-looking statements**

Certain statements contained in this press release, including information as to the future financial or operating performance of Cardinal and its projects may also include statements which are 'forward-looking statements' that may include, amongst other things, statements regarding targets, anticipated timing of the feasibility study (FS) on the Namdini project, estimates and assumptions in respect of mineral resources and anticipated grades and recovery rates, production and prices, recovery costs and results, capital expenditures and are or may be based on assumptions and estimates related to future technical, economic, market, political, social and other conditions. These 'forward – looking statements' are necessarily based upon a number of estimates and assumptions that, while considered reasonable by Cardinal, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies and involve known and unknown risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in such forward-looking statements.

Cardinal disclaims any intent or obligation to update publicly or release any revisions to any forward-looking statements, whether as a result of new information, future events, circumstances or results or otherwise after today's date or to reflect the occurrence of unanticipated events, other than required by the Corporations Act and ASX and TSX Listing Rules. The words 'believe', 'expect', 'anticipate', 'indicate', 'contemplate',

'target', 'plan', 'intends', 'continue', 'budget', 'estimate', 'may', 'will', 'schedule' and similar expressions identify forward-looking statements.

All forward-looking statements made in this press release are qualified by the foregoing cautionary statements. Investors are cautioned that forward-looking statements are not guarantees of future performance and accordingly investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

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### SCHEDULE 1 NDONGO DRILL RESULTS

Hole ID	Depth (m)	Dip (°)	Azimuth (°)	Grid_ID	mEast	mNorth	mRL
NDRC325	85	-50	130	UTM WGS84 Zone 30 North	756,382	1,196,424	222
NDRC326	76	-50	130	UTM WGS84 Zone 30 North	756,298	1,196,475	220
NDRC327	84	-50	130	UTM WGS84 Zone 30 North	756,207	1,196,530	218
NDRC329	85	-50	130	UTM WGS84 Zone 30 North	756,499	1,197,081	221
NDRC330	85	-50	130	UTM WGS84 Zone 30 North	756,597	1,197,028	225
NDRC331	66	-50	130	UTM WGS84 Zone 30 North	756,131	1196577.51	218
NDRC332	85	-50	130	UTM WGS84 Zone 30 North	756,232	1,196,792	220
NDRC333	76	-50	130	UTM WGS84 Zone 30 North	756,309	1,196,734	221
NDRC334	72	-50	130	UTM WGS84 Zone 30 North	756,401	1,196,681	222
NDRC335	60	-50	130	UTM WGS84 Zone 30 North	756,487	1,196,633	224
NDRC336	85	-50	130	UTM WGS84 Zone 30 North	756,543	1,196,598	224
NDRC337	84	-50	130	UTM WGS84 Zone 30 North	756,437	1,196,652	223
NDRC338	78	-50	130	UTM WGS84 Zone 30 North	756,679	1,196,971	226
NDRC339	85	-50	130	UTM WGS84 Zone 30 North	756,543	1,197,056	224
NDRC340	85	-50	130	UTM WGS84 Zone 30 North	756,624	1,198,888	215
NDRC341	85	-50	130	UTM WGS84 Zone 30 North	756,740	1,197,879	215
NDRC342	85	-50	130	UTM WGS84 Zone 30 North	756,671	1,198,854	215
NDRC343	85	-50	130	UTM WGS84 Zone 30 North	756,359	1,198,120	231
NDRC344	72	-50	130	UTM WGS84 Zone 30 North	756400	1198094	229
NDRC345	85	-50	130	UTM WGS84 Zone 30 North	756443	1198066	231
NDRC346	85	-50	130	UTM WGS84 Zone 30 North	756779	1197859	225
NDRC347	85	-50	130	UTM WGS84 Zone 30 North	756827	1197824	215

**Table 1: Meta-Data Listing of Drill Holes**

Hole_ID	mFrom	mTo	mWidth	Au g/t
NDRC329	61	62	1	0.7
NDRC334	31	32	1	0.7
NDRC339	74	75	1	3.2
NDRC342	0	3	3	0.7

**Table 2: Summary of Individual Intercepts**

**Notes:**

- Samples are analysed for Au (SGS Lab FAA505 method) using is a 50g charge Fire Assay fusion with AAS instrument finish.
- Grid coordinates are in WGS84 Zone 30 North.
- The intercepts were calculated, using a greater than 0.5 g/t Au cut-off, which approximates the cut-off for Reasonable Prospects of Eventual Economic Extraction ("RPEEE") as per the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves ("JORC Code") 2012 and the Canadian Institute of Mining ("CIM") 2010 guidelines, and internal dilution of no more than 3m at <0.5g/t Au.

## JORC CODE 2012 EDITION

## TABLE 1 REPORTING OF EXPLORATION RESULTS - NDONGO

## Section 1 – Sampling Technique and Data

Criteria	JORC Code Explanation	Commentary
Sampling techniques	Nature and quality of sampling (e.g. 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.	Reverse Circulation (RC) drill samples are collected by using downhole sampling hammers with nominal 140mm diameters. Samples are collected through a cyclone and immediately weighed to determine recoveries; the entire sample is then split by a three-tier riffle splitter. Two samples (~2.5-3.0 kg) are collected, one for the laboratory, the other a duplicate stored at the Bolgatanga sample shed.  Diamond sampling is by half-core samples of HQ core size.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Sampling is guided by Cardinal Resources protocols and Quality Control procedures as per industry standard.  To ensure representative sampling: 1m RC samples are collected from a cyclone, passing them through a 3-tier riffle splitter, and taking duplicate samples every 20th sample.  HQ core samples are taken selectively through the altered, silicified and shear zones, with minimum 0.5m and maximum 1.5m lengths of sample.
	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 (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g 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 (e.g. submarine nodules) may warrant disclosure of detailed information.	The determination of mineralisation is based on observed alterations, silicification and shearing of the lithologies.  RC samples are crushed to -2mm, then a <1kg split sample is pulverised via LM2 Ring Pulveriser to a nominal 85% passing -75µm.  Diamond drill samples are crushed to -2mm, and a <1kg split sample is then pulverised via LM2 Ring Pulveriser to a nominal 85% passing -75µm.  A 200g sub-sample is taken from the pulverised material for analysis. A 50g charge weight is fused with litharge-based flux, cupelled and the prill dissolved in aqua regia. The gold tenor is then determined by

Criteria	JORC Code Explanation	Commentary
<p><b>Drilling techniques</b></p>	<p>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. 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.).</p>	<p>AAS.</p> <p>Reverse circulation drilling uses sampling hammer of nominal 140mm diameter.</p> <p>Diamond core drilling is completed with core size of HQ with a standard tube. Triple tube is used in saprolite at the tops of the holes. Core is orientated to determine both azimuth and dip using digital Reflex ACT II RD orientation tool.</p> <p>Drill holes are inclined at -50° angles for optimal zone intersection. All drill collars are surveyed using Trimble R8 RTK GPS with downhole surveying every 30m using Reflex digital surveying instruments.</p>
<p><b>Drill sample recovery</b></p>	<p>Method of recording and assessing core and chip sample recoveries and results assessed.</p>	<p>Diamond core recovery is logged and captured into the database. The Method of recording chip and core sample recoveries was to enter the relevant data on a hand-held Motion F5te Tablet PC using a set of standard templates supplied by Maxwell Geoservices, Perth (Maxwell).</p> <p>Reverse circulation sampling is good. RC chips are logged, weighed and captured to the database. RC sample recoveries are assessed by weighing 1m samples from the cyclone on a scale in the field and comparing with the theoretical volume contained in a 1m x 140mm diameter hole to calculate an estimated percentage sample recovery.</p> <p>Core recovered from each drill run is measured and compared with the drill run length drilled to calculate an estimated percentage core recovery. For core drilling overall recoveries are excellent with weighted average recovery greater than 98%.</p>
	<p>Measures taken to maximise sample recovery and ensure representative nature of the samples.</p>	<p>Measures taken include the use of bigger HQ core size diamond drilling to maximise recovery, having a geologist onsite to examine core and core metres marked and orientated to check against the driller's blocks and ensuring that all core loss is taken into account.</p> <p>At the reverse circulation rig, sampling systems are routinely cleaned to minimise</p>

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Criteria	JORC Code Explanation	Commentary
		<p>the opportunity for contamination and drilling methods are focused on sample quality. The measures taken to maximise RC sample recovery are through a cyclone and a 3-tier riffle splitter. Each 1m sample is passed twice through the splitter before sampling to ensure maximum homogenisation of each sample and to collect an unbiased representative sample to be assayed.</p> <p>The reverse circulation rigs have auxiliary compressors and boosters to help maintain dry samples. Where wet samples are encountered, the reverse circulation drilling is discontinued.</p>
	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.	No relationship is seen to exist between sample recovery and grade, and no sample bias has occurred due to preferential loss/gain of any fine/coarse material due to the acceptable sample recoveries obtained by the drilling methods employed.
<b>Logging</b>	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	<p>All drill holes are fully logged. The lithology, alteration and geotechnical characteristics of core are logged directly to a digital format on a Field Toughbook laptop logging system following procedures and using Cardinal geologic codes. Data is imported into Cardinal's central database after validation in LogChief™.</p> <p>In the opinion of the Component Persons all geological logging is to a level of detail to support future Mineral Resource estimation.</p>
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	<p>Logging is both quantitative and qualitative.</p> <p>Both RC chips in trays and HQ core are photographed both in dry and wet form.</p>
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full and to the total length of each drill hole.
<b>Sub-sampling techniques and sample preparation</b>	If core, whether cut or sawn and whether quarter, half or all core taken.	Orientation of core is completed for all diamond holes and all are marked prior to sampling. Longitudinally cut half core samples are produced using a Core Saw with diamond impregnated blades. Samples are weighed and recorded.
	If non-core, whether riffled, tube sampled, rotary split, etc. and whether	RC samples are split using a three-tier riffle splitter. The majority of RC samples are dry.

Criteria	JORC Code Explanation	Commentary
	sampled wet or dry.	On occasions that wet samples are encountered, they are dried prior to splitting with a riffle splitter.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	<p>RC drill samples are sorted and dried in an oven for 8 hours and weighed. They are then crushed to -2mm using a RSD Boyd crusher and a &lt;1.0kg split is taken. The reject sample is retained in the original bag and stored. The split is pulverised in a LM2 Ring Pulveriser to a nominal 85% passing 75µm and a 200g sub-sample is used for analysis.</p> <p>Drill core samples are sorted, dried at 105°C for 4 hours and weighed. Samples are crushed through Jaques crusher to nominal -10mm. A second stage crushing is through Boyd crusher to nominal -2mm and then split to &lt;1.0kg. The reject sample is retained in the original bag and stored. The split is pulverised in a LM2 Ring Pulveriser to a nominal 85% passing 75µm and approximately 200g sub-sample of the pulverised material is used for fire assay.</p> <p>All preparation equipment is flushed with barren material prior to commencement of the job.</p>
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	<p>Cardinal Resources has protocols that cover the sample preparation at the laboratories and the collection and assessment of data to ensure that accurate steps are used in producing representative samples for the analytical process. Key performance indices include:</p> <ul style="list-style-type: none"> <li>• Contamination index of 95% (that is at least 95% of blanks pass); failures can only be attributed to probable minor laboratory contamination.</li> <li>• Crushed Size index of 95% passing 2 mm (1:50 sample screened).</li> <li>• Grind Size index of 85% passing 75 microns (minimum 1:50 sample screened).</li> <li>• Check Samples returning at worst 20% precision at 90th percentile and bias of 5% or better.</li> </ul> <p>Crusher and pulveriser are flushed with barren material at the start of every batch.</p>
	Measures taken to ensure that the	Measures taken to ensure that the RC

Criteria	JORC Code Explanation	Commentary
	sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.	<p>sampling is representative of the in-situ material collected are to take field duplicate samples every 20th sample. Approximately 3kg samples from the splitter are retained from each sample and stored at the company's secured premises for possible re-assay.</p> <p>Measures taken to ensure that the core sampling is representative is to sample half core at 0.5m (minimum) to 1.5m (maximum) intervals through the recognisable altered, silicified, mineralised shear zones.</p> <p>Results of field duplicates for RC samples and Check Samples for both RC and DD samples are all evaluated to ensure that the results of each assay batch are acceptable. 1:20 grind quality checks are completed for 85% passing 75µm criteria to ensure the representativeness of sub-samples.</p>
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Sample sizes are considered appropriate to the grain size.
<b>Quality of Assay data and laboratory tests</b>	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	<p>All samples are analysed for gold by lead collection fire assay of a 50g charge with AAS finish; the assay charge is fused with the litharge-based flux, cupelled and prill dissolved in aqua regia with gold tenor determined by flame AAS. Fire assay is considered a total assay technique.</p> <p>In the opinion of the Competent Persons, the analytical method is considered appropriate for the mineralisation style and is of industry standard.</p>
	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 hand-held geophysical tools are used.
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	Cardinal's QAQC protocol is considered industry standard with certified reference materials (CRMs) submitted on a regular basis with routine samples. The CRMs having a range of values and blanks are inserted in the ratio of 1:20. Duplicates are taken at the riffle splitter every 20 <sup>th</sup>

Criteria	JORC Code Explanation	Commentary
		<p>sample. No duplicate samples are taken from core samples.</p> <p>Pulps are submitted to a secondary laboratory for checks on the accuracy and precision of the primary laboratory.</p> <p>Coarse rejects are submitted back to the primary laboratory to assess the adequacy of the sub-sampling process.</p> <p>Laboratories' QAQC involves the use of internal laboratory standards using certified reference material and blanks.</p>
<b>Verification of sampling and assaying</b>	The verification of significant intersections by either independent or alternative company personnel.	Significant intersections have been verified by alternative company personnel.
	The use of twinned holes.	None of the drill holes in this report are twinned.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Primary data are captured on field tough book laptops using LogChief™ Software. The software has validation routines and data is then imported onto a secure central database.
	Discuss any adjustment to assay data.	The primary data is always kept and is never replaced by adjusted or interpreted data.
<b>Location of data points</b>	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.	<p>Initially drill hole collar coordinates are obtained using handheld Garmin GPSmap 64s GPS within ±3m accuracy.</p> <p>Subsequently all drill collars are accurately surveyed using Trimble R8 RTK DGPS system within ±10mm of accuracy (X, Y, Z).</p> <p>Coordinates are based on three control stations established at Namdini by Sahara Mining Services.</p> <p>Accuracy and quality of downhole surveys of RC and DD drill holes are determined by using Reflex Ez-Shot survey instrument at regular 30m intervals.</p>
	Specification of the grid system used.	Coordinate and azimuth are reported in UTM WGS84 Zone 30 North.
	Quality and adequacy of topographic control.	Topographic control at Ndongo was supplied by Southern Geoscience Consultants (Perth) using satellite imagery.
<b>Data spacing and distribution</b>	Data spacing for reporting of exploration results.	The RC drilling was carried out on variably spaced fence lines to test for

Criteria	JORC Code Explanation	Commentary
		mineralisation.
	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.	Exploration is at the early stage, and as such drill data spacing and distribution are insufficient to establish geological and grade continuity that are appropriate for reporting Mineral Resources and Ore Reserves.
<b>Orientation of data in relation to geological structure</b>	Whether sample compositing has been applied.	No sample compositing has been applied.
	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	Drill holes are orientated to achieve intersection angles as close to perpendicular to the mineralisation as practicable based on ground magnetic modelling data and previous RC drilling. Some sampling bias may occur.  Systematic geological mapping and structural information from the current diamond drilling are required to determine the true orientation of dips and structures of the mineralisation.
	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 significant orientation-based sampling bias is known at this time.
<b>Sample security</b>	he measures taken to ensure sample security.	An independent Ghanaian security contractor is used to ensure sample security.  The drilling contractor is accountable for drill core and RC chip production at the drill site. Final delivery from the drill site to the laydown area within the core yard is managed by Cardinal. The core yard technicians, field technicians and Geologists ensure the core and chips are logged, prepared and stored under security until conveyed to a nearby accredited sample preparation laboratory by Cardinal.  At the time of sample delivery at the laboratory, a sign-off process between Cardinal and the laboratory ensures that samples and paperwork correspond and samples are receipted against the Cardinal

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Criteria	JORC Code Explanation	Commentary
		<p>submission sheets. The sample preparation laboratory is responsible for the samples from the time of collection from Cardinal until pulps and rejects are collected and checked by Cardinal Geologists.</p> <p>Two pulp samples are produced:</p> <ul style="list-style-type: none"> <li>• one pulp dispatched by Cardinal to the appropriate laboratory for assay;</li> <li>• the duplicate pulp and reject stored by Cardinal in a secure storage facility for possible re-assay or other testwork.</li> </ul>
<b>Audits or reviews</b>	The results of any audits or reviews of sampling techniques and data.	Sampling techniques are of industry standards.

## Section 2 – Reporting of Exploration Results

(Criteria listed in section 1 will also apply to this section where relevant)

Criteria	JORC Code Explanation	Commentary
<b>Mineral Tenement and Land Status</b>	Type, name/reference number, location and ownership including agreements or material issues with third parties including joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	The Ndongo Exploration Permit is on PL9/22, PL9/13, PL9/19 and PL9/36 licenses over an area of 295 sq. km located in the North-East region of Ghana.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.	All tenements are current and in good standing.
<b>Exploration Done by Other Parties</b>	Acknowledgment and appraisal of exploration by other parties.	<p>Exploration in the region has been undertaken by a number of groups including:</p> <ul style="list-style-type: none"> <li>• 1933 - Colonial discovery of Gold at Nangodi.</li> <li>• 1934 to 1942 - Nangodi Gold Mine production and other small development projects in the area (e.g. Zug, Pelungu, Money Palava).</li> <li>• 1992 to 1994 - BHP conducted regional exploration programmes including regional stream sediment and broad soil sampling to follow-up on stream</li> </ul>

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		<p>sediment anomalies. Project was abandoned when BHP withdrew from activity in West Africa.</p> <ul style="list-style-type: none"> <li>• 1996 to 1997 – Africwest granted regional Reconnaissance License and undertook extensive soil sampling at Nangodi.</li> <li>• 2006 - Etruscan (JV with Red Back): Conducted data review and compilation, soil and rock sampling and RAB drilling. Identified blind mineralisation at Zupeliga.</li> <li>• 2011 - Abzu (JV with Red Back): Completed data compilation, RC/diamond drilling at Nangodi and Zoog.</li> <li>• 2012 - Abzu (JV with Red Back): Conducted trenching, rock sampling, ground geophysics survey (magnetic and EM) and geologic mapping.</li> </ul>
<b>Geology</b>	Deposit type, geological setting and style of mineralisation	<p>Drill samples were collected within sheared and folded rocks containing sulphides; mainly pyrite with minor arsenopyrite.</p> <p>The geological setting is a Paleoproterozoic Greenstone Belt comprising Birimian metavolcanics, volcanoclastics and metasediments located along portion of the regional Bole-Bolgatanga Shear Zone and a splay off this Shear Zone (the Nangodi Shear Zone).</p> <p>Gold mineralisation occurs within shear zones comprising alteration haloes containing higher grade lenses of altered, silicified, sheared metavolcanics and disseminated sulphides</p>
<b>Drill hole information</b>	<p>A summary of all information material to the understanding of the exploration results including tabulation of the following information for all Material drill holes:</p> <ul style="list-style-type: none"> <li>• Easting and northing of the drill hole collar</li> <li>• Elevation or RL (Reduced Level – elevation above sea level in meters) of the drill hole collar</li> <li>• Dip and azimuth of the hole</li> <li>• Down hole length and interception depth</li> <li>• Hole length</li> </ul>	A summary of drill hole information is provided in this document.
	If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract	There has been no exclusion of information.

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	from the understanding of the report, the Competent Person should clearly explain why this is the case.	
<b>Data aggregation methods</b>	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.	No weighting averaging techniques nor cutting of high grades have yet been undertaken.
	Where aggregated 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.	Aggregated intersections incorporating short lengths of high-grade results within the shear zones are calculated to include no more than intervals of 3m below grades of <0.5 g/t Au when assay results are reported.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalents are used in the intersection calculation.
<b>Relationship between mineralisation widths and intercept lengths</b>	These relationships are particularly important in the reporting of exploration results.	The relationship between mineralisation widths and intersection lengths from DD drilling are not yet fully understood.
	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	The geometry of the mineralisation with respect to the drill hole angles is not yet known.
	If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').	The geometry of the mineralisation is unknown; only downhole length is reported (no true width of mineralisation is reported).
<b>Diagrams</b>	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 plane view of drill hole collar locations and appropriate sectional views.	Appropriate locality map, cross sections of the drilling, interpreted geology and assays are included within the body of the accompanying document.
<b>Balanced Reporting</b>	Where comprehensive reporting of all Exploration Results is not practical, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	The accompanying document is considered to represent a balanced report.
<b>Other substantive exploration data</b>	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observation; 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.	Other exploration data collected is not considered material to this document at this stage.  The interpretation of the geological observations shown in the cross sections are subject to possible change as new information is gathered.  Further data collection will be reviewed and reported when considered material.

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<b>Further Work</b>	<p>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large – scale step – out drilling).</p> <p>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</p>	<p>Geological interpretation is ongoing and this process will incorporate all new assay results, geophysical dataset and geochemical data analysis to continue to generate a robust interpretation for further targeting.</p>

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