Quarterly Activities for the Period Ended 30 September 2019

01.11.2019 | GlobeNewswire

TORONTO, Nov. 01, 2019 - Cardinal Resources Ltd. (ASX: CDV; TSX: CDV) (“Cardinal” or “the Company”) a Ghana gold focused exploration and development company, is pleased to present its Quarterly activities report for the period ended 30 September 2019.

HIGHLIGHTS

- On July 10, 2019 the Company announced further intersections of shallow, high-grade gold mineralisation from diamond drill programme at the new Ndongo East discovery, located approximately 24km north of the Namdini Gold Project in Ghana, West Africa.
- On July 12, 2019 the Company held a successful Public Hearing and Presentation for Traditional Paramount Chief which demonstrated strong local support for the Namdini Gold Project.
- On July 16, 2019 the Company announced positive results from infill drilling testing of a selected area within the proposed starter pit that encompasses the first 2 to 3 years production at its flagship Namdini Gold Project, which provided another layer of confidence that the spatial distribution and tenor of gold within the test area are in line with the Mineral Resource expectations.
- On September 4, 2019 the Company announced a key appointment of Mr. David Anthony to the position of Chief Operating Officer ahead of its Namdini Gold Project development in Ghana, West Africa.
- On September 30, 2019 the Company announced its Feasibility Study status in reference to its announcement of June 4, 2019 in relation to its proposed Feasibility Study release scheduled for Q3, 2019. Having received the awaited Maelgwyn (Aachen™) laboratory data, the Company released its Feasibility Study on October 28, 2019.

OUTLOOK

The principal activity of the Company is gold exploration and mine development in Ghana. The Company holds tenements prospective for gold mineralisation in Ghana in two granite-greenstone belts: the Bolgatanga Project and the Namdini Gold Project (“Namdini Gold Project” or “Namdini”), which are, respectively, located within the Greenstone Belts in northeast Ghana and the Subranum Project, which is located within the Sefwi Greenstone Belt in southwest Ghana.

The main focus of activity is the Namdini Gold Project which has a gold Ore Reserve of 5.1 Moz (138.6Mt @ 1.13g/t Au; 0.5g/t Au cut-off) inclusive of 0.4 Moz Proved (7.4 Mt @ 1.31g/t Au; 0.5 g/t Au cut-off) and 4.7 Moz Probable (131.2 Mt @ 1.12 g/t Au; 0.5g/t Au cut-off).

Figure 1: Cardinal Resources Tenements in Ghana:
https://www.globenewswire.com/NewsRoom/AttachmentNg/e67159fc-3512-4b5b-b11f-da6ed35de554

Subsequent to end of Quarter

- On October 3, 2019 the Company announced that it successfully raised $17.6M through exercise of listed options.
  A total of 117,398,958 of the Listed Options were exercised, being 99.84% of the Listed Options on issue, raising approximately $17.6 million in cash proceeds. Only 188,081 Listed Options expired unexercised.
- On October 28, 2019 the Company released its Feasibility Study confirming the Namdini Project as a tier one gold project.

THE NAMDINI GOLD PROJECT

Property Title / Mining Lease

A Large-Scale Mining License covering the Namdini Mining Lease was granted to Cardinal Namdini Mining Limited (“Cardinal Namdini”), a wholly owned subsidiary of Cardinal, by the Minister of Lands and Natural Resources under the Ghanaian Minerals and Mining Act 2006 (Act 703) in December 2017. The Large-Scale Mining License covers 19.54 km^2 in the Dakoto area of the Talensi District Assembly in Upper East Region of Ghana evidenced by a Mining Lease for an initial period of 15 years and is renewable.

Project Development and Finance Update

Project Finance Adviser, Cutfield Freeman & Co, continues to work closely with Cardinal to ensure that Cardinal is well positioned to execute project finance for the Namdini Gold Project as swiftly as possible following completion and release of the Feasibility Study, which was released on October 28, 2019.

The company has received substantial interest from a range of potential financiers, providing the Company with a high level of confidence that it will be able to secure the necessary project funding package on favourable terms.

Cardinal’s Project Finance team continues to evaluate Indicative Term Sheets from a number of project financiers including traditional senior debt lenders.

Project Development Partners

COMPANY	ROLE
Lycopodium	Feasibility Study Managers. Process plant and associated infrastructure. Ca estimation.
Golder Associates	Mine design, planning, optimisation and scheduling. Geotechnical, Hydrolog engineering. Mine operational costs.
Orway Minerals Consultants	Comminution data analysis, crushing and grinding option studies.
ALS Laboratory (Perth)	Metallurgical testwork to support the process design criteria.
Knight Piésold Consulting	Tailings Storage Facility and selected infrastructure design.
Independent Metallurgical Operations	Metallurgical testwork management, analysis and process flowsheet develo
MPR Geological Consultants	Mineral Resource modelling of the Namdini Deposit.
Orefind	Geology and deposit structural genesis.
Sebbag Group International	Mine Design Review.
NEMAS Consult & Geoscience Consulting	Environmental Impact Assessment Study.
Whittle Consulting	Enterprise Optimisation of the Namdini Project.
Alastri Software	Tactical Scheduling, Haulage Modelling and Reserving Software.
Maelgwyn Mineral Services Africa	Aachen^{TM} process metallurgical optimisation.
BDO Advisory	Financial Model Integrity & Reviewer (PEA, PFS and FS).
MKM Social	Socio-Economic Study and Resettlement Action Plan.

Table 4: Study Team

Project Metallurgical Update

Testwork continued at Maelgwyn Mineral Services Africa (MMSA) laboratory in South Africa to demonstrate potential uplift in gold recovery for principle lithologies and grade bins.

Independent Metallurgical Operations (IMO) sent a flotation specialist to assist MMSA with the testwork focusing on optimising their larger flotation cells used for testwork. In additional to this visit Daryl Evans from IMO, and one of Cardinal’s Competent Persons for the Namdini Project and Bruce Lilford, Cardinal’s Project Manager, undertook an inspection of the testwork being undertaken by MMSA.

Mr. Lilford also visited the Pan African Resources Elikhulu process plant in Evander, South Africa which utilises the Aachen technology in their operation. Operations Management at Elikhulu reported positive results from the Aachen installation.

Results from the MMSA testwork are being received on an ongoing basis and the detailed costs benefit analysis continues to be on-going to define the optimal regrind selection size.

In addition to the MMSA testwork, further testwork is being undertaken at the ALS laboratory in Perth to define process design criteria data for Lycopodium’s process design, as well to provide umpiring results for the work being undertaken by MMSA. MMSA has further transported test samples to ALS for audit purposes. The results of the audit are still pending.

Feasibility Study Update

During the Quarter the Company announced that its Feasibility Study (FS) is near completion and would be released during October 2019, the FS was released on October 28, 2019. The FS was postponed to allow the Company’s engineering consultants further time to detail the Namdini Gold Project design for further mining, processing and infrastructure definition.

Cardinal’s engineering consultants, Lycopodium, have solicited a time validity extension for the detailed quotations and tenders for the majority of the equipment and materials in the design.

The capital and operating cost estimates are being updated with recent testwork results from MMSA and ALS to ensure full integration of the testwork results into the design.

Further mine schedule and cost optimisation is being completed by Sebbag Group International, Golder Associates (Golder) and Alastri Software (Alastri) to enhance project economics. This has included, but has not been limited to:

- Whittle Consulting optimised internal phase pit shell recommendations. These have been utilised by Golder to convert pit shells to practical mine phase designs, which will result in bringing revenue forward and maximising NPV.
- Pit design initiatives include rationalisation of ramp development, integration of geotechnical berms and interphase interactions over the LOM, plus selective smoothing to reduce waste mining.
- Golder utilised mine optimisation software to strategically schedule the pit / phase extraction sequences, to guide the tactical mine schedule, balance process throughput and mining constraints.
- Further optimisation is in progress using Alastri, to develop tactical mine schedule and optimised mine haulage (i.e. waste dump placement and stockpile management).
- Whittle Consulting are further consulting and will provide advice with respect to cut-off optimisation and strategic scheduling, once finalised mine and phase designs have been completed.

Geochemical testing undertaken by Golder has reported the following:

- There is an excess of buffering capacity in the system that can offset the acidity generated by oxidation of sulphides.
- Data suggest that most rock types are unlikely to generate acid leachate.
- The mine schedule will be updated once the testwork results confirm the acid generating potential of the waste.

The Company has also updated the High Voltage (HV) power supply study for the FS design. Three options were presented to Cardinal by ECG who are undertaking the HV study. Further options were being considered for FS and were finalised during the study.

Environmental and Social Update

Developing a successful and sustainable gold mine continues to be a key focus for Cardinal. Progress on the

environmental permitting is as follows:

- Environmental Impact Study (EIS) has been submitted to the Ghana Environmental Protection Agency (EPA) for approval.
- TSF EIS Scoping Report Submitted in May 2019 to the EPA, with the EIS to be submitted shortly.
- A successful Public Hearing was conducted July 2019.

Ghana based company, MKM Social are continuing with development of the Relocation Action Plan (RAP) and Socio-Economic and Health Baseline Study. The aim of this study is to outline the framework to meet Ghana’s Environmental Protection Agency permit requirement and international best practice such as the Equator Principles, the International Finance Corporation’s (IFC) Performance Standards on Social and Environmental Sustainability. Below is a summary of the progress, as follows:

- Reconnaissance of Project Affected People and Facilities has been in completed.
- The baselining site visit was completed in August 2019.
- MKM representatives attended the environmental Public Hearing in July 2019.
- The first draft for the baseline report is expected in October 2019.

Project Development Timeline

The Company released its FS after Quarter end, on October 28, 2019, having received the awaited Maelgwyn (Aachen™) laboratory results (Refer to ASX/TSX press release September 30, 2019).

Milestone	Target Timeline
Completion of Pre-Feasibility Study (Completed)	Q3 2018
Completion of Feasibility Study (Completed)	Q4 2019
Final Investment Decision	Q4 2019
Target Production Commencement	H2 2022

Table 5: Namdini Project Development Timeline

The above schedule is subject to available funding, positive outcomes for the Feasibility Study and favorable timelines for permitting.

Namdini Project Drilling

Namdini Infrastructure Sterilisation Drilling

The Company continued with sterilisation drilling of the proposed infrastructure area within the Namdini Mining License.

To date, approximately 32,610m of drilling has been completed, comprising of 333 RC holes for approximately 3,1975m and 2 diamond drill holes for approximately 635m (Figure 2).

During the Quarter, 19 RC holes were completed for a total of 1,859m with 2,036 samples, including QAQC controls, and have been submitted to the laboratory for gold analysis using Fire Assay analytical technique (Table 6). This drilling was conducted to complete the sterilisation programme planned over the northern area of the mining lease and the proposed plant area.

Sterilisation drilling to date has returned no significant mineralisation.

Programme	No. Holes	RC (m)	DD (m)	Total (m)	No. Samples	No. Duplicates	No. Blanks	No. Stds	Total Samples
Sterilisation Drilling	19	1,859	-	1,859	1,859	88	44	45	2,036

Table 6: Namdini Sterilisation Drilling

Figure 2: Namdini Project Drill Locations Showing the Proposed Infrastructure and the Designed Pit: https://www.globenewswire.com/NewsRoom/AttachmentNg/7869d128-0aaa-4bf7-87d3-1bf8ae42f2e8

Namdini Southern Extension Drilling

During the quarter the Company received results from the three diamond drill holes, totaling approximately 2,200m, that were completed during the June 2019 quarter on a fence 50m south of the Namdini deposit (Figure 2 - Section A-250). This drilling was aimed at testing the southerly strike extension of the mineralisation beyond the current planned Open Pit containing 5.1Moz Ore Reserve (138.6 Mt @ 1.13 g/t Au; 0.5 g/t Au 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).

All drill holes returned significant intersections including, 3m @ 0.8g/t Au from 370.5m, 3m @ 0.7g/t Au from 378.5m and 6m @ 1.9g/t Au from 402.5m all in NMDD167; 3m @ 2.2g/t Au from 215m in NMDD176 and 7.0m @1.0g/t Au from 121m in NMDD175 (Figure 3).

The intercepts are hosted within moderately altered diorites, minor metavolcanics, granitoid slivers, quartz stringers and disseminated pyrites.

These drill results, in addition to mapping of nearby artisanal mine exposures, show that the mineralisation continues along strike to the south. The mineralisation appears to be a narrow vein structural system, compared to the more coherent and broad-zones of disseminated mineralisation, defined in the Namdini Deposit.

The Company is encouraged by the coherent lithology and mineralisation intersected by drilling at depth and below the current pit optimisation. The underground potential of the mineralisation will be tested by exploration drilling targeting the depth extensions below the current planned open pit.

Figure 3: Section Through the Southern Extension Drill Holes: https://www.globenewswire.com/NewsRoom/AttachmentNg/c3dc2d12-4578-4229-95ab-8f2f2712d667

REGIONAL EXPLORATION UPDATE

The Company has two exploration projects: The Bolgatanga Project which includes Bongo, Kungongo and Ndongo Prospecting License Areas (Figure 4) in the northeast of Ghana and the Subranum Project located in southwest Ghana (Figure 1).

The main focus of the Company’s regional exploration program during the Quarter was completing diamond drilling, auger drilling and preliminary bottle roll cyanide leach testing at Ndongo East on its highly prospective areas along the Nangodi Shear Zone, within the Ndongo Prospective License. Detailed ground geophysical surveys were also ongoing over the Ndongo License area during the Quarter. During Q1, Q2 and Q3 of 2019, Cardinal reported several intersections of high-grade gold at its new Ndongo East discovery within the Ndongo License (refer to ASX/TSX news releases dated January 23, 2019, March 27, 2019 and July 10, 2019).

Figure 4: Namdini Mining License and Bolgatanga Project Tenements: https://www.globenewswire.com/NewsRoom/AttachmentNg/f823ebee-0e0d-494f-ba61-7c2e834ef00e

**7.4Mt @ 1.31g/t Au for 0.4Moz Au Proved and 131.2Mt @ 1.12g/t Au for 4.7Moz Au Probable; 0.5g/t Au cut-off*

BOLGATANGA PROJECT

Ndongo License Area

The Company has continued to concentrate its exploration focus this Quarter on the Ndongo License which covers an area of 325km^2 (Figure 4). Exploration has defined seven prospects (Figure 5) totalling approximately 70km in strike length within approximately 15-25km north of the Namdini Gold Project.

The Nangodi Shear Zone which lies within the Ndongo tenement is spatially related to no fewer than four major gold discoveries, including the Company’s Namdini Gold Project, the Shaanxi Mine, the historic Nangodi Gold Mine and the Youga Gold Mine in Burkina Faso, adjacent to the Ghana border (Figure 5). In addition, there are numerous historic shallow artisanal workings along many parts of this shear zone.

Ndongo East Prospect

Diamond Drilling

Two Diamond Drill holes were completed on the Ndongo East Prospect during the Quarter for a total of 378.66m with 413 samples, including QAQC controls. All samples were submitted to SGS Ghana analytical laboratory for analysis of gold using the Fire Assay analytical method (Table 7).

Prospect	Drill Method	No. Holes	Total (m)	No. Samples	Duplicates	Blanks	Stds	Total Samples
Ndongo East	DD	2	378.66	395	-	9	9	413

Table 7: Ndongo East Exploration Drilling for Q3 2019

Assay results from the two drill holes together with three diamond drill holes that were completed in the previous Quarter were received. The drilling was completed on a representative section (E1-E1) within the well-defined mineralised zone (Figure 6) with the objective of systematically testing the mineralisation at depth and up dip where the mineralised zone is expected to sub crop. Drilling on the fence was approximately to 25 to 50m centres.

Best intercepts in the new drill holes this Quarter include:

- 4.1m @ 13.1g/t Au from 96m in NDDD085
- 9.1m @ 2.9g/t Au from 37m in NDDD086
- 7.6m @ 4.8g/t Au from 151m in NDDD088

These intercepts are hosted within a gold-bearing, pyrite-silica-ankerite carbonate altered, shear zone which dips to the northwest. As shown in Figures 6 and 7.

- The first two deep holes NDDD088 and NDDD089 end in mineralisation and add approximately 90 metres down dip extent to this section of the ore zone.
- The two shallow holes NDDD086 and NDDD087 on the same section confirm the mineralisation sub cropping with encouraging grades and width of 9.1m @ 2.9g/t Au from 37m and 5m @ 1.8g/t Au from 5m respectively.
- Results to date have indicated shallow mineralisation intercepts to approximately 80 metres vertically below surface with encouraging grades and thickness.
- The mineralised system remains open along a northeast-southwest strike and at depth with multiple mineralised intersections.

Previously, numerous shallow depth intersections over significant widths were intercepted in numerous holes including:

- 5.3m @ 13.9g/t Au from 78m in NDDD063*
- 5.5m @ 3.8g/t Au from 31m in NDDD072*
- 3.7m @ 3.3g/t Au from 59m in NDDD064*
- 2.7m @7.7g/t Au from 19m in NDDD068*
- 2.0m @ 18.3g/t Au from 59m in NDDD066*
- 14.0m @ 7.0g/t Au from 69m in NDDD046*

- 9.0m @ 23.3g/t Au from 60m in NDRC248*
- 8.3m @ 11.3g/t Au from 76m in NDDD059*
- 5.2m @ 4.5g/t Au from 60m in NDDD060*
- 3.0m @ 29.3g/t Au from 45m in NDDD036*

**Refer to ASX/TSX press releases dated 16 July and 29 August 2018, 23 January 25 March and 10 July 2019*

These encouraging results to date at the Ndongo East Prospect continue to encourage further carefully measured investment into establishing viable shallow high-grade mineralised zones which could develop into possible satellite pits for the Namdini Gold Project located approximately 24km south.

Figure 5: Ndongo Prospecting License showing Local Prospects:
https://www.globenewswire.com/NewsRoom/AttachmentNg/e5ebe086-1fee-46df-b00f-943e8506fedf

Figure 6: Ndongo East Prospect with Drill Locations showing NE-SW Mineralised Structures Open Along Strike:
https://www.globenewswire.com/NewsRoom/AttachmentNg/32ad2031-009d-4466-a419-a6a7bf79f080

Figure 7: Ndongo East Prospect Section E1-E1:
https://www.globenewswire.com/NewsRoom/AttachmentNg/2f2c9a2d-0364-4d3a-9a19-4faed5c0c27b

Auger Drilling

The Company continued field work focused on confirmation of targets, field mapping and auger infill drilling of previously defined gold anomalies within the structural corridor hosting the Ndongo East initial discovery.

After an extensive 2,047 auger infill drilling programme of previously identified gold anomalies defined by 200m by 50m - 100m spaced sampling (refer to ASX/TSX press releases dated December 13, 2017 and May 28, 2018) to 50m centres along 100m spaced lines, for a total of 7,952m, the soil geochemical gold anomalies are now defined to a higher confidence extending over approximately 9km in strike length and between 0.5 to 1km wide. All results to date are illustrated on Figures 8 and 9. The anomaly highlights two subparallel trends consisting of:

- a more coherent geochemical gold anomaly trending NNE-SSW along the contact between mafic to intermediate volcaniclastic and granitoid rocks, over approximately 7km, open to the southwest; and
- a cluster of geochemical gold anomalies starting immediately to the south of the Ndongo East discovery and trending NS over 7km to the south. Each of these anomalies strike over approximately 1.2 to 1.5km lengths with similar signature to the initial discovery zone. The results of the new infill auger results for Au > 40ppb have been summarised in Schedule 1 Table 16 of the report. The Company plans to drill test these gold geochemical anomalies, as the soil sampling results to date suggest a potential to discover additional high-grade shallow mineralisation such as Ndongo East.

Figure 8: Ndongo East Targets over Auger Points and Gold Grade Contours:
https://www.globenewswire.com/NewsRoom/AttachmentNg/3af42e64-f6eb-4727-9437-3f1a30f0fe4f

Figure 9: Ndongo East Target over Auger Results and Geology:
https://www.globenewswire.com/NewsRoom/AttachmentNg/9cb71b78-c712-48f5-8df5-8e5df7d2aec5

Preliminary Bottle Roll Cyanide Leach Test

The Company is encouraged by the results of preliminary bottle roll cyanide extraction tests completed at the Ndongo East prospect. These preliminary results suggest that the mineralisation at Ndongo East will be suitable to conventional cyanide leach gold extraction.

The preliminary bottle roll cyanide leach testing was conducted using samples selected from 12

representative diamond drill holes. Samples used for the tests weighed approximately 2kg each and were taken primarily from fresh rock mineralised intercepts. The purpose of the bottle roll tests was to initially assess the gold recovery through a simple industry standard cyanide leaching process. The tests were conducted at the certified SGS Laboratories in Ghana and South Africa.

Bottle Roll Cyanide Leach Test Samples Collection:

Twelve coarse reject samples from twelve diamond drill hole intercepts, that had previously been crushed to 75% passing -2mm with predicted gold grade range of 1.4 to 29.3g/t based on original Fire Assay results were selected. These samples were representative of potential ore-grade mineralisation of the Ndongo East initial discovery zone and were selected from varying depths within the fresh rock.

Each sample selected was homogenised by passing the entire sample several times through the riffle splitter and then splitting off a 3.0 kg sample.

Test sample locations are shown in Figure 9 and described in Table 8 below:

HoleID	SampleID	Depth From (m)	Depth To (m)	Length (m)	Predicted Head Grade^ (Au g/t)
NDDD036	NDMC0001	45.0	48.0	3.0	29.3
NDDD037	NDMC0002	122.0	125.0	3.0	4.1
NDDD046	NDMC0003	73.0	82.0	9.0	10.5
NDDD054	NDMC0004	2.0	6.0	4.0	2.0
NDDD056	NDMC0005	7.3	12.0	4.8	3.3
NDDD058	NDMC0006	51.2	64.5	13.3	1.8
NDDD059	NDMC0007	75.7	84	8.3	11.3
NDDD060	NDMC0008	60.0	65.2	5.2	4.5
NDDD061	NDMC0009	76.7	82.7	6.0	1.6
NDDD063	NDMC0010	78.0	83.3	5.3	4.2
NDDD071	NDMC0011	19.0	23.6	4.6	1.4
NDDD072	NDMC0012	31.3	36.8	5.5	3.8

Table 8: Ndongo East Preliminary Cyanide Leach Test Sample Information

Notes to Table 8:

^Predicted Head Grade is the length weighted average of the original diamond drill hole Fire Assay results.

Figure 9: Ndongo East Prospect on Geology Showing Locations of Preliminary Bottle Roll Test Samples: https://www.globenewswire.com/NewsRoom/AttachmentNg/9ace2404-684e-4f93-ba2f-6584230b10e4

Test Work Completed:

The entire 3kg sample was re-crushed by the laboratory to ensure 75% passing -2mm, split and then pulverised to a homogenised 85% passing 75μm material. A 2kg split of each thoroughly homogenised sample underwent the following tests:

- A bottle roll cyanide leach, 24-hour solvent extraction with AAS finish;
- Total Sulphur and Carbon by LECO;
- Aqua Regia extraction for Arsenic with AAS; and
- The sub-sample of each of the bottle roll residue material was analysed by two separate Fire Assay tests for gold, total Sulphur and Carbon by LECO and Arsenic determined by Aqua Regia instrument finish.

Head grade samples were analysed by the following methods:

- Screen Fire Assay for gold;
- Total Sulphur and total Carbon by LECO;
- Aqua Regia extraction for Arsenic; and
- Multielement 4-Acid digest ICPOES/MS analysis for a total of 59 elements.

All services at SGS laboratories are provided with Quality assurance protocol in line with ISO 17025 (quality accreditation system for commercial laboratories – ISO 10725).

Test Work Results:

The results of the bottle roll cyanide leach results are summarised in Tables 9 and 10.

The recoveries of gold at the end of 24 hours range between 75.0% to 93.6%. These encouraging preliminary bottle roll gold recovery results confirm that the Ndongo East ore should be amendable to conventional cyanide leaching.

HoleID	SampleID	Recovered Gold (Au g/t)	Gold in Tail (Au g/t)	Calculated Head Grade* (Au g/t)	Assay Head Grade# (Au g/t)	Predicted Head Grade^ (Au g/t)	Recovery (%)
NDDD036	NDMC0001	36.0	3.4	39.4	33.2	29.3	91.4
NDDD037	NDMC0002	5.5	0.9	6.5	5.1	4.1	85.9
NDDD046	NDMC0003	8.4	0.7	9.1	9.0	10.5	92.3
NDDD054	NDMC0004	1.0	0.3	1.3	1.8	2.0	76.9
NDDD056	NDMC0005	3.2	0.5	3.7	3.2	3.3	86.5
NDDD058	NDMC0006	1.5	0.3	1.8	1.6	1.8	83.3
NDDD059	NDMC0007	11.8	1.3	13.1	9.5	11.3	90.1
NDDD060	NDMC0008	3.8	0.8	4.6	3.6	4.5	82.6
NDDD061	NDMC0009	1.4	0.4	1.8	1.7	1.6	77.8
NDDD063	NDMC0010	4.4	0.3	4.7	3.1	4.2	93.6
NDDD071	NDMC0011	1.0	0.2	1.2	1.1	1.4	83.3
NDDD072	NDMC0012	2.7	0.9	3.6	3.3	3.8	75.0

Table 9: Gold Recoveries from Ndongo East Preliminary Bottle Roll Cyanide Leach Tests

Notes to Table 9:

1. * The Calculated Head Grade is computed by mathematically combining the actual recovered gold and the gold in tails
2. #Assay Head Grade is the calculated weighted average of the plus and fine fractions from Screen Fire Assay results reported by the laboratory
3. ^Predicted Head Grade is the length weighted average of the original drill Fire Assay results

The excellent correlation between the Calculated Head Grade (BLEG) against both the Assay Head Grade (Screen Fire Assay) and Predicted Head Grade (Original Fire Assay) is an indication of the homogenous nature of the test samples.

Upon completion of the leach cycle, the gold remaining in the leached tails was determined by duplicate Fire Assay instrument finish, with the resulting average taken as the gold in tails. The Calculated Head Grade is computed by mathematically combining the actual recovered gold and the gold in tails. The leached tails were also analysed for Arsenic by aqua regia with instrument finish and total Carbon and Sulphur by LECO. The detailed results are summarised in Table 10.

		BLEG	LECO	LECO	Aqua Regia Tails				
HoleID	SampleID	Au (g/t)	C (%)	S (%)	As (g/t)	Au (g/t)	Au(R) (g/t)	C (%)	S (%)	As (g/t)
NDDD036	NDMC0001	36.0	1.9	1	141	3.5	3.4	1.9	1.1	139
NDDD037	NDMC0002	5.5	2.2	1.2	960	0.9	1.0	2.2	1.2	1000
NDDD046	NDMC0003	8.4	2.3	0.9	230	0.6	0.7	2.2	0.8	244
NDDD054	NDMC0004	1.0	<0.1	<0.1	333	0.3	0.2	<0.1	<0.1	327
NDDD056	NDMC0005	3.2	0.2	<0.1	320	0.5	0.5	0.2	<0.1	303
NDDD058	NDMC0006	1.5	2.1	1.1	225	0.3	0.3	2.1	1.1	206
NDDD059	NDMC0007	11.8	2.1	1.5	270	1.3	1.3	2.0	1.6	260
NDDD060	NDMC0008	3.8	2.6	1.2	160	0.8	0.8	2.6	1.2	157
NDDD061	NDMC0009	1.4	2.2	1.3	521	0.4	0.4	2.2	1.4	525
NDDD063	NDMC0010	4.4	1.6	0.9	69	0.3	0.3	1.6	0.9	70
NDDD071	NDMC0011	1.0	2.1	0.6	144	0.2	0.2	2.1	0.7	119
NDDD072	NDMC0012	2.7	2.5	2.2	285	0.9	1.0	2.4	2.2	282

Table 10: Ndongo East Preliminary Detailed Bottle Roll Cyanide Leach Results

The Assay Head Grade was determined by Screen Fire Assay using a nominal 500g sub-sample which was screen through the nominated cloth to 106μm. The entire coarse fraction (including the disposable screen cloth) was analysed for gold by Fire Assay instrument finish. The fine fraction was analysed for gold by Fire Assay instrument finish in duplicate. A weighted average was then calculated to determine the total gold content as the Assay Head Grade as summarised in Table 11.

HoleID	SampleID	Au+ (g/t)	Weight+ (g)	Au1- (g/t)	Au2- (g/t)	Au Calculated (g/t)
NDDD036	NDMC0001	25.7	22.1	33.9	33.3	33.2
NDDD037	NDMC0002	5.1	49.2	5.1	5.1	5.1
NDDD046	NDMC0003	21.5	47.9	7.2	8.2	9.0
NDDD054	NDMC0004	1.9	46.4	1.9	1.8	1.8
NDDD056	NDMC0005	2.1	26.6	3.2	3.4	3.2
NDDD058	NDMC0006	1.6	34.8	1.6	1.8	1.7
NDDD059	NDMC0007	18.6	19.3	9.6	8.7	9.5
NDDD060	NDMC0008	3.9	39.6	3.5	3.7	3.6
NDDD061	NDMC0009	1.5	26.1	1.8	1.6	1.7
NDDD063	NDMC0010	0.8	38.1	3.3	3.2	3.1
NDDD071	NDMC0011	0.3	15.4	1.1	1.2	1.1
NDDD072	NDMC0012	1.7	28.9	3.5	3.4	3.3

Table 11: Screen Fire Assay Results

On a separate split of the homogenous composite sample, a Mixed Acid Digest with ICPOES/MS finish multielement analysis was undertaken at the SGS Randfontein laboratory in South Africa. Elements tested include Al ,Ba, Ca ,Cr ,Cu ,Fe ,K, Li ,Mg ,Mn ,Na, P ,S ,Sr, Ti, V, Zn, Zr, Ag, As, Be, Bi ,Cd, Ce, Co, Cs, Dy, Er, Eu, Ga, Gd, Ge, Hf, Ho, In, La, Lu, Mo, Nb, Nd, Ni, Pb, Pr, Rb, Sb, Sc, Se, Sm, Sn, Ta ,Tb, Te, Th, Tl, Tm, U, W ,Y, and Yb. The full results of the multielement analysis has been provided in Table 17 in Schedule 1.

The Company is encouraged by these preliminary results and plan to submit a larger set of samples for further cyanide leach and more specific testing in establishing the deportment of gold in this highly prospective area.

Kungongo Licence Area

The Kungongo License is located in northeast Ghana some 45km west of the Company’s Namdini

Gold Project. The License covers an area of approximately 120.12km^2 and is a renewable Exploration License (Figure 4).

No exploration activity was undertaken at Kungongo during the Quarter. Programme of works has been submitted to the Forrest Commission of Ghana to undertake Gradient Array IP survey over the extended tenements across the Bole-Bolgantanga Shear. The programme of work is expected to be approved by the Forrest Commission to allow this planned non-destructive survey to be undertaken soon after the wet season in Ghana.

Bongo Licence Area

The Bongo Licence covers an area of approximately 465 km^2 adjacent to the regional Bole-Bolgatanga Shear and is dominated by three major intrusive complexes, predominantly granitoids of intermediate to foliated felsic basin types intercalated with mafic volcanic flows (Figure 4).

During the Quarter, an auger sampling programme was completed in the north east corner of the tenement along the Bole-Bolgatanga Shear. This programme was an extension to the original 400m by 50m auger programme completed immediately to the SW within this licence area. The programme consisted of 779 holes totalling 3,106m on a grid of 200m by 50m spacing. A total of 857 samples, including QAQC samples, were submitted for BLEG analyses. Results are pending.

SUBRANUM PROJECT

The Subranum Project covers an area of 69km² located in southwest Ghana. The license straddles the eastern margin of the Sefwi Gold Belt which is bounded by the regional Bibiani Shear Zone (“BSZ”) stretching about 200km across southwestern Ghana.

There is 9km of the BSZ developed within the Subranum license trending NE to SW. The BSZ forms a very prospective, sheared contact between Birimian phyllites and greywackes to the southeast and mafic to intermediate volcanics and volcaniclastics to the northwest. Granitoid stocks of the Dixcove suite intrude this shear zone.

The portion of the Bibiani Shear Zone occurring within the Subranum tenement is 9km long, trending SW to NE. Previous extensive exploration has outlined a 5km long gold target, extending from the SW tenement boundary towards the NE, with the remaining 4km of the 9km strike length remaining relatively unexplored.

Only a very small portion of this 5km long gold target was diamond drilled during drilling programmes in 2018.

No exploration activities were undertaken on this tenement during this Quarter due to the wet season in southern Ghana.

TENEMENT SCHEDULE - ASX LISTING RULE 5.3.3

The following mining tenement information is provided pursuant to ASX Listing Rule 5.3.3. No tenements in part or whole were relinquished, surrendered or otherwise divested during the quarter ended 30 September 2019.

Tenement	License Status	Ref	Interest Acquired During Quarter	Interest Divested During Quarter	Interest Held at End of Quarter
Ghana					
Bolgatanga Project					

Ndongo	Prospecting	PL9/13, PL9/19, PL9/22 & PL936	-	-	100%
Kungongo	Prospecting	RL9/28	-	-	100%
Bongo	Prospecting	PL9/29, PL9/37 & PL9/38	-	-	100%
Namdini Project					
Namdini	Mining License	LVB14619/09	-	-	100%
Subranum Project					
Subranum	Prospecting	PL/309	-	-	100%

CORPORATE

During the Quarter the Company was pleased to to announce the appointment of Mr David (Dave) Anthony to the position of Chief Operating Officer (COO) for the Company’s Namdini Gold Project in Ghana, West Africa.

Dave is a qualified Mining Engineer from Queens University in Canada. He has more than 30 years’ experience in mining and mineral processing and has worked at senior management and executive levels in the design, construction and operation of gold processing plants and mines globally. Dave was responsible for the design and delivery of mines with capital costs of up to USD$3.8 Billion and with total material movements of up to 40 million tonnes per annum.

Dave’s extensive global experience includes the design, construction, optimisation and operation of 12 mines of which six gold mining projects were with Barrick Gold, including four in Africa. Dave was appointed COO of Barrick Africa in 2009 which was listed on the London Stock Exchange in March 2010 with a market capitalization of $3.8 Billion and was ranked in the FTSE 100 within two months of listing.

Dave is well recognised as a resourceful Team Leader with a track record of delivering high quality production assets on time, on budget and with exemplary safety and environmental performance. His global experience and industry contacts will be highly valuable assets to Cardinal in the construction of the proposed 9.5mtpa mine for the 5.1 Moz* Mineral Ore Reserve within the Namdini open pit gold deposit.

Together with Cardinal’s expanding Construction Owners’ Team, Dave will complement the two Directors on the Cardinal Board who have extensive successful gold mine build experience; Dr. Kenneth G. Thomas who has over 45 years’ experience building mines with companies including Barrick and Kinross, and Mr. Trevor Schultz who also has over 45 years’ experience building mines with companies including AngloGold Ashanti in Ghana and most recently with Centamin Plc in Egypt.

CAPITAL STRUCTURE
As at 30 September 2019 the Company had the following capital structure;

Capital Structure	Listed	Unlisted	Total
Fully Paid Ordinary Shares (CDV)	410,397,776	-	410,397,776
Options Ex. $0.15 on or before 30 Sep 2019	117,587,039	-	117,587,039
Unlisted Options Ex. $0.22 on or before 18 Mar 2020	-	6,000,000	6,000,000
Unlisted Options Ex. $0.75 on or before 21 Dec 2022	-	1,000,000	1,000,000
Milestone Options Ex. $0.50 on or before 12 Apr 2022	-	18,500,000	18,500,000
Milestone Options Ex. $0.965 on or before 21 Dec 2022	-	2,018,100	2,018,100
Milestone Options Ex. $0.679 on or before 21 Dec 2022	-	2,180,049	2,180,049
Milestone Options Ex. $0.59 on or before 21 Dec 2022	-	2,180,049	2,180,049
Unlisted Options Ex. $1.00 on or before 21 Dec 2022	-	1,867,817	1,867,817

Class C Performance Shares	-	60	60

Cash Balance

The Company’s cash balance at 30 September 2019 was approximately AU$14.7 million.

Subsequent to period end, on October 3, 2019 the Company announced that AU$17.6m was raised through the exercise of Listed Options.

ABOUT CARDINAL

Cardinal Resources Ltd. (ASX/TSX: CDV) is a West African gold‐focused exploration and development Company that holds interests in tenements within Ghana, West Africa.

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), and a soon to be completed Feasibility Study.

Exploration programmes are also underway at the Company’s Bolgatanga (Northern Ghana) and Subranum (Southern Ghana) Projects.

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 April 3, 2019. All material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed.

For further information contact:

Archie Koimtsidis	Alec Rowlands
CEO / MD	IR / Corp Dev
Cardinal Resources Ltd.	Cardinal Resources Ltd.
P: +61 8 6558 0573	P: +1 647 256 1922
Andrew Rowell	Peta Baldwin
Cannings Purple	Cannings Purple
E: arowell@canningspurple.com.au	E: pbaldwin@canningspurple.com.au
P: +61 400 466 226	P: +61 455 081 008

Competent / Qualified Person Statement

The scientific and technical information in this Quarterly report 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.

The scientific and technical information in this Quarterly report that relates to Exploration Results at the Bolgatanga Project and Subranum Project is based on information prepared by Mr. Paul Abbott, a full-time employee of Cardinal Resources Ltd., 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 to 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”.

Cardinal confirms that it is not aware of any new information or data that materially affects the information included in its announcement Ore Reserve of 03 April 2019. All material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed.

ASX Listing Rule 5.23.2

This report contains information extracted from the following reports which are available for viewing on the Company’s website www.cardinalresources.com.au :

- 30 Sept 2019 Feasibility Study Update
- 04 Sept 2019 Cardinal Makes Key Appointment Ahead of Project Development
- 16 July 2019 Cardinal’s Starter Pit Infill Drilling Results
- 10 July 2019 Cardinal Reports Further Shallow High-Grade Gold
- 04 June 2019 Positive Metallurgical Update on the Namdini Project
- 18 April 2019 Addendum to Namdini Ore Reserve Press Release
- 10 April 2019 Feasibility Study and Project Finance Updates
- 03 April 2019 Cardinal’s Namdini Ore Reserve Now 5.1 Moz
- 27 March 2019 Cardinal Intercepts High‐Grade Shallow Gold at Ndongo East
- 23 Jan 2019 Cardinal Hits More High-Grade Shallow Gold at Ndongo East
- 28 Nov 2018 New Drill Season hits high-grade shallow gold at Ndongo East
- 18 Sept 2018 Cardinal Namdini Pre-Feasibility Study 4.76Moz Ore Reserve
- 29 Aug 2018 Cardinal Extends Ndongo East Discovery Strike Length
- 31 July 2018 Cardinal Executes U$5 Million Term Sheet with Sprott
- 16 July 2018 Cardinal Makes New Gold Discovery at Ndongo East
- 28 May 2018 Encouraging First Pass Gold Results at Ndongo
- 19 April 2018 Technical Report on Namdini Gold Project Filed on SEDAR
- 04 April 2018 First Pass Regional Exploration Drilling Underway
- 05 Mar 2018 Cardinal Upgrades Indicated Mineral Resource to 6.5Moz
- 22 Feb 2018 Cardinal Infill Drilling Results Returned
- 05 Feb 2018 Namdini Gold Project Preliminary Economic Assessment
- 22 Jan 2018 Namdini Infill Drilling Results Returned
- 14 Dec 2017 Namdini Drilling and Regional Exploration Update
- 12 Dec 2017 Cardinal Grade Control Drill Results Returned

The Company confirms it is not aware of any new information or data that materially affects the information included in this report relating to exploration activities and all material assumptions and technical parameters underpinning the exploration activities in those market announcements continue to apply and have not been changed. The Company confirms that the form and context in which the Competent Person’s findings are presented have not been materially modified from the original market announcements. Cardinal 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. All material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed.

Disclaimer

This ASX / TSX press release has been prepared by Cardinal Resources Ltd. (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.

SCHEDULE 1

NAMDINI PROJECT AND NDONGO LICENSE AREA DRILL RESULTS

Hole ID	Type	Depth (m)	Dip	Azimuth	Grid_ID	mEast	mNorth	mRL
NMDD167	DDH	533.6	-61.4°	83.2°	UTM_WGS84Zone_30 North	756,988	1,176,427	220.6
NMDD175	DDH	202.05	-60.6°	97.1°	UTM_WGS84Zone_30 North	757,294	1,176,421	245.8
NMDD176	DDH	295.0	-60.7°	99.7°	UTM_WGS84Zone_30 North	757,195	1,176,440	242.3

Table 12: Meta‐Data Listing of Namdini Drill Holes

HoleID	mFrom	mTo	mLength	Au_ppm

NMDD167	370.5	373.5	3.0	0.8
NMDD167	378.5	381.5	3.0	0.7
NMDD167	402.5	408.5	6.0	1.9
NMDD175	121.0	128.0	7.0	1.0
NMDD176	215.0	218.0	3.0	2.1

Table 13: Summary of Individual Intercepts – Namdini Drill Holes

Hole ID	Type	Depth (m)	Dip	Azimuth	Grid_ID	mEast	mNorth	mRL
NDDD085	DDH	114.5	-59.6°	118.5°	UTM_WGS84Zone_30 North	758,140	1,201,993	220.8
NDDD086	DDH	57.3	-59.6°	119.4°	UTM_WGS84Zone_30 North	758,205	1,201,948	219.9
NDDD087	DDH	114.5	-61.2°	117.8°	UTM_WGS84Zone_30 North	758,228	1,201,934	219.7
NDDD088	DDH	168.4	-61.3°	119.4°	UTM_WGS84Zone_30 North	758,098	1,202,019	221.4
NDDD089	DDH	210.3	-61.4°	117.0°	UTM_WGS84Zone_30 North	758,060	1,202,026	221.6

Table 14: Meta‐Data Listing of Ndongo East Drill Holes

HoleID	mFrom	mTo	mLength	Au_ppm
NDDD085	96.0	100.1	4.1	13.1
NDDD086	37.0	46.1	9.1	2.9
NDDD087	5.0	10.0	5.0	1.8
NDDD088	151.0	158.6	7.6	4.8
NDDD089	192.0	195.9	3.9	1.3

Table 15: Summary of Individual Intercepts – Ndongo East

Hole ID	Type	Grid_ID	mEast	mNorth	mRL	mFrom	mTo	Au_ppb
NGAS1813	Auger	WGS84_30N	757,773	1,202,541	214	2	3	89
NGAS1950	Auger	WGS84_30N	757,905	1,200,577	211	2	3	70
NGAS1951	Auger	WGS84_30N	757,943	1,200,549	207	2	3	40
NGAS2180	Auger	WGS84_30N	757,901	1,200,103	215	2	3	85
NGAS2182	Auger	WGS84_30N	757,813	1,200,154	212	4	5	82
NGAS2274	Auger	WGS84_30N	757,880	1,198,936	231	2	3	44
NGAS2276	Auger	WGS84_30N	757,792	1,198,992	228	2	3	231
NGAS2296	Auger	WGS84_30N	757,094	1,198,249	233	2	3	57
NGAS2300	Auger	WGS84_30N	756,926	1,198,357	229	2	3	41
NGAS2307	Auger	WGS84_30N	756,670	1,198,513	233	2	3	300
NGAS2350	Auger	WGS84_30N	756,396	1,196,564	216	2	3	1,209
NGAS2351	Auger	WGS84_30N	756438	1,196,536	219	2	3	49
NGAS2383	Auger	WGS84_30N	756,275	1,195,218	206	2	3	43
NGAS2384	Auger	WGS84_30N	756,311	1,195,200	210	4	5	68
NGAS2385	Auger	WGS84_30N	756,353	1,195,175	207	4	5	46
NGAS2386	Auger	WGS84_30N	756,396	1,195,147	208	3	4	47
NGAS2391	Auger	WGS84_30N	756,609	1,195,014	211	2	3	50
NGAS2446	Auger	WGS84_30N	757,921	1,198,439	234	2	3	219
NGAS2492	Auger	WGS84_30N	756,502	1,198,149	231	4	5	48
NGAS2494	Auger	WGS84_30N	756,416	1,198,200	231	4	5	123
NGAS2536	Auger	WGS84_30N	756437	1,195,592	210	4	5	53
NGAS2570	Auger	WGS84_30N	757907	1,194,303	223	6	7	239
NGAS2584	Auger	WGS84_30N	756249	1,194,533	203	4	5	93

NGAS2716	Auger	WGS84_30N	756,630	1,196,654	222	2	3	72
NGAS2734	Auger	WGS84_30N	756,671	1,196,155	218	2	3	877
NGAS2746	Auger	WGS84_30N	756,713	1,195,657	215	4	5	92
NGAS2767	Auger	WGS84_30N	755,910	1,193,802	200	4	5	48
NGAS2778	Auger	WGS84_30N	755,436	1,193,628	202	3	4	69
NGAS2793	Auger	WGS84_30N	755,548	1,193,319	201	2	3	99
NGAS2795	Auger	WGS84_30N	755,209	1,193,531	206	4	5	48
NGAS2817	Auger	WGS84_30N	758,135	1,199,719	225	2	3	50
NGAS2883	Auger	WGS84_30N	756692	1,197,319	218	2	3	301
NGAS2936	Auger	WGS84_30N	755,780	1,194,355	211	2	3	47
NGAS2938	Auger	WGS84_30N	755,866	1,194,300	208	2	3	76
NGAS2940	Auger	WGS84_30N	755,949	1,194,252	205	1	2	61
NGAS2941	Auger	WGS84_30N	755,717	1,194,155	207	1	2	163
NGAS2946	Auger	WGS84_30N	754,870	1,193,272	199	2	3	80
NGAS2976	Auger	WGS84_30N	754,806	1,193,075	199	2	3	42
NGAS3013	Auger	WGS84_30N	756,271	1,194,287	205	4	5	113
NGAS3038	Auger	WGS84_30N	753,088	1,192,497	216	2	3	127
NGAS3133	Auger	WGS84_30N	758,172	1,201,812	212	2	3	164
NGAS3248	Auger	WGS84_30N	758,258	1,201,651	209	2	3	318
NGAS3367	Auger	WGS84_30N	757,803	1,200,756	210	2	3	60
NGAS3445	Auger	WGS84_30N	758,361	1,201,937	216	2	3	49
NGAS1813	Auger	WGS84_30N	757,773	1,202,541	214	2	3	89
NGAS3474	Auger	WGS84_30N	758,080	1,201,644	214	2	3	111

Table 16: Ndongo East Auger Results > 40ppb Au

Hole ID	Type	Grid_ID	mEast	mNorth	mRL	mFrom	mTo	Au_ppb
NGAS3519	Auger	WGS84_30N	757,936	1,200,904	209	3	4	51
NGAS3522	Auger	WGS84_30N	758,062	1,200,819	212	2	3	79
NGAS3556	Auger	WGS84_30N	757,499	1,200,585	215	4	5	120
NGAS3566	Auger	WGS84_30N	756,713	1,200,959	220	2	3	64
NGAS3680	Auger	WGS84_30N	757,895	1,201,167	215	2	3	43
NGAS3826	Auger	WGS84_30N	756,985	1,198,907	233	6	7	72
NGAS3827	Auger	WGS84_30N	756,941	1,198,932	233	5	6	56
NGAS3848	Auger	WGS84_30N	756,913	1,198,485	232	6	7	110
NGAS3850	Auger	WGS84_30N	756,288	1,198,399	231	6	7	56
NGAS3856	Auger	WGS84_30N	756,501	1,198,264	233	8	9	73
NGAS3861	Auger	WGS84_30N	756,798	1,198,078	227	8	9	112
NGAS3868	Auger	WGS84_30N	757,040	1,197,924	232	10	11	40
NGAS3876	Auger	WGS84_30N	756,722	1,197,652	220	6	7	46
NGAS3881	Auger	WGS84_30N	756,327	1,197,666	223	6	7	251
NGAS3892	Auger	WGS84_30N	756,559	1,197,283	217	9	10	40
NGAS3893	Auger	WGS84_30N	756,600	1,197,254	216	6	7	55
NGAS3897	Auger	WGS84_30N	756,753	1,197,147	218	4	5	92
NGAS3916	Auger	WGS84_30N	756,671	1,198,853	243	6	7	345
NGAS3922	Auger	WGS84_30N	756,882	1,198,736	235	8	9	53
NGAS3931	Auger	WGS84_30N	756,558	1,198,481	232	10	11	60
NGAS3937	Auger	WGS84_30N	756,765	1,198,333	230	8	9	61
NGAS3939	Auger	WGS84_30N	756,860	1,198,277	231	6	7	161
NGAS3945	Auger	WGS84_30N	757,063	1,198,149	229	8	9	50
NGAS3948	Auger	WGS84_30N	757,181	1,198,067	234	6	7	69

NGAS3951	Auger	WGS84_30N	756,984	1,197,722	229	8	9	106		
NGAS3957	Auger	WGS84_30N	756,780	1,197,856	220	3	4	536		
NGAS3958	Auger	WGS84_30N	756,743	1,197,881	223	6	7	69		
NGAS3959	Auger	WGS84_30N	756,700	1,197,904	223	8	9	99		
NGAS3963	Auger	WGS84_30N	756,399	1,198,091	228	6	7	101		
NGAS3964	Auger	WGS84_30N	756,359	1,198,120	229	4	5	51		
NGAS3968	Auger	WGS84_30N	756,438	1,197,137	213	8	9	179		
NGAS3969	Auger	WGS84_30N	756,466	1,197,121	213	10	11	653		
NGAS3972	Auger	WGS84_30N	756,585	1,197,041	218	6	7	48		
NGAS3973	Auger	WGS84_30N	756,631	1,197,026	219	6	7	72		
NGAS3974	Auger	WGS84_30N	756,671	1,196,994	219	4	5	89		
NGAS3991	Auger	WGS84_30N	756,164	1,196,589	212	2	3	46		
NGAS4011	Auger	WGS84_30N	756,637	1,196,735	219	8	9	100		
NGAS4012	Auger	WGS84_30N	756,593	1,196,762	217	8	9	62		
NGAS4015	Auger	WGS84_30N	756,472	1,196,857	217	8	9	41		
NGAS4016	Auger	WGS84_30N	756,442	1,196,886	218	8	9	40		
NGAS4018	Auger	WGS84_30N	756,363	1,196,938	216	8	9	398		
NGAS4025	Auger	WGS84_30N	756,342	1,196,824	217	6	7	63		
NGAS4026	Auger	WGS84_30N	756,389	1,196,795	219	6	7	113		
NGAS4038	Auger	WGS84_30N	756,508	1,196,612	218	10	11	45		
NGAS4039	Auger	WGS84_30N	756,551	1,196,578	219	6	7	53		

Table 16 (continued): Ndongo East Auger Results > 40ppb Au

HoleID	From (m)	To (m)	Al (%)	Ba (ppm)	Ca (%)	Cr (ppm)	Cu (ppm)	Fe (%)	K (%)	Li (ppm)	Mg (%)	Mn (ppm)	Na (%)	P (ppm)	S (%)	Sr (ppm)	Ti (%)	V (ppm)	Z (p
NDDD036	45.0	48.0	6.14	221	3.42	94	61.7	3.14	0.86	11	1.98	524	3.28	768	1.31	571	0.09	92	5
NDDD037	122.0	125.0	6.99	279	3.93	71	72.9	3.46	1.26	9	2.07	581	3.58	878	1.45	631	0.07	112	4
NDDD046	73.0	82.0	6.62	270	4.06	112	65.5	3.36	1.04	10	2.22	636	3.52	506	1.11	822	0.07	100	4
NDDD054	2.0	6.0	6.72	526	0.21	157	57	4.58	1.1	9	0.34	1020	2.37	416	0.02	206	0.09	137	5
NDDD056	7.3	12.0	5.94	203	0.44	69	23.6	3.63	1.2	3	0.22	502	4.81	622	0.02	253	0.08	89	3
NDDD058	51.2	64.5	6.36	268	3.42	77	47.4	3.23	0.89	9	1.77	527	3.36	741	1.29	651	0.06	84	4
NDDD059	75.7	84.0	5.3	193	3.18	80	64.1	2.85	0.74	6	1.52	479	3.01	530	1.72	604	0.03	79	3
NDDD060	60.0	65.2	5.19	182	4.26	114	28.3	3.22	0.85	12	2.29	718	2.6	387	1.47	670	0.07	92	3
NDDD061	76.7	82.7	6.67	282	3.65	103	64.8	3.17	1.11	7	1.8	533	3.45	861	1.52	637	0.07	97	4
NDDD063	78.0	83.3	4.3	162	2.61	72	41.4	2.57	0.61	8	1.49	409	2.21	514	0.99	379	0.05	67	3
NDDD071	19.0	23.6	7.81	316	3.76	63	39.9	3.42	1.41	9	1.92	575	3.95	973	0.85	715	0.11	97	4
NDDD072	31.3	36.8	8.31	211	4.32	66	40.6	3.7	1.13	6	2.08	602	5	859	2.71	781	0.11	94	3

HoleID	From (m)	To (m)	Be (ppm)	Bi (ppm)	Cd (ppm)	Ce (ppm)	Co (ppm)	Cs (ppm)	Dy (ppm)	Er (ppm)	Eu (ppm)	Ga (ppm)	Gd (ppm)	Ge (ppm)	Hf (ppm)	Ho (ppm)	In (p
NDDD036	45.0	48.0	0.5	0.68	0.02	61.3	19	0.43	1.41	0.67	1.01	13.4	3.39	<0.1	1.34	0.27	0.0
NDDD037	122.0	125.0	0.7	0.26	0.02	73.5	19.1	0.7	1.79	0.69	1.25	15.6	4.16	<0.1	1.93	0.32	0.0
NDDD046	73.0	82.0	0.6	0.23	0.04	44.1	19.5	0.56	1.31	0.56	0.74	14.1	2.45	<0.1	1.04	0.25	0.0
NDDD054	2.0	6.0	0.8	0.14	0.03	65.3	25	0.84	2.19	0.92	1.16	16.2	3.82	<0.1	1.7	0.41	0.0
NDDD056	7.3	12.0	0.5	0.15	0.03	77.1	18.2	0.45	2.12	0.94	1.34	15.7	4.51	<0.1	2.01	0.37	0.0
NDDD058	51.2	64.5	0.5	0.07	0.04	58.8	16.7	0.46	1.56	0.55	0.94	12.8	3.18	<0.1	1.16	0.26	0.0
NDDD059	75.7	84.0	0.4	0.09	0.05	50.2	14.6	0.33	1.08	0.41	0.74	10.4	2.49	<0.1	0.96	0.19	0.0
NDDD060	60.0	65.2	0.4	0.08	0.06	43.4	17.6	0.65	1.24	0.53	0.81	9.8	2.78	<0.1	0.91	0.22	0.0
NDDD061	76.7	82.7	0.6	0.07	0.03	68.5	16.6	0.56	1.83	0.65	1.08	14.5	3.65	<0.1	1.45	0.26	0.0

NDDD063	78.0	83.3	0.4	0.08	0.03	48.9	15.1	0.39	1.16	0.47	0.81	9.9	2.76	<0.1	0.96	0.2	0.0
NDDD071	19.0	23.6	0.6	0.08	0.03	78.1	16.6	0.61	1.85	0.76	1.26	15.7	4.27	<0.1	1.87	0.32	0.0
NDDD072	31.3	36.8	0.5	0.47	0.02	92	18.7	0.45	2.11	0.82	1.43	15.9	4.9	<0.1	2.25	0.35	0.0

Table 17: Composite Sample Multielement 4-Acid Digest Results – Ndongo East

HoleID	From (m)	To (m)	Ni (ppm)	Pb (ppm)	Pr (ppm)	Rb (ppm)	Sb (ppm)	Sc (ppm)	Se (ppm)	Sm (ppm)	Sn (ppm)	Ta (ppm)	Tb (ppm)	Te (ppm)	Th (ppm)	Tl (ppm)	Tm (pp
NDDD036	45.0	48.0	57.1	15.5	7.24	21.6	4.01	12.8	3	4.6	0.4	0.64	0.24	1.52	3	<0.2	0.1
NDDD037	122.0	125.0	58.7	8.7	8.72	32.1	3.36	13	3	5.6	0.4	0.6	0.32	1.36	4	<0.2	0.1
NDDD046	73.0	82.0	67.8	10.3	5.16	26.5	3.23	14.2	4	3.3	<0.3	0.5	0.15	0.81	2	<0.2	0.0
NDDD054	2.0	6.0	63.4	10.7	7.33	36.4	3.8	18.7	4	4.9	0.5	1.43	0.29	0.76	3.3	<0.2	0.1
NDDD056	7.3	12.0	52	16.1	9.15	27.2	4.16	15	3	5.9	0.3	0.93	0.37	1.23	4.4	<0.2	0.1
NDDD058	51.2	64.5	50.6	8.5	6.98	21.7	2.22	11.2	3	4.2	<0.3	0.27	0.22	0.7	2.5	<0.2	0.1
NDDD059	75.7	84.0	44.3	8	5.88	17.6	2.93	9.4	3	3.4	<0.3	<0.05	0.12	0.69	2	<0.2	0.0
NDDD060	60.0	65.2	58.4	13	5.31	18.6	1.29	13.7	4	3.8	<0.3	0.14	0.15	0.69	1.7	<0.2	0.0
NDDD061	76.7	82.7	51.3	7.9	7.99	27	3.41	11.7	4	4.8	0.3	0.27	0.3	0.43	3.3	<0.2	0.1
NDDD063	78.0	83.3	53	7.1	5.92	16.9	3.27	10.2	3	3.8	<0.3	0.06	0.16	0.34	2	<0.2	0.0
NDDD071	19.0	23.6	53.9	12.8	9.41	28.9	2.58	12.1	3	5.8	<0.3	0.2	0.32	0.36	3.7	<0.2	0.1
NDDD072	31.3	36.8	56.9	17	11.2	21.3	3.52	12.6	3	6.7	<0.3	0.26	0.38	0.89	4.3	<0.2	0.1

Table 17 (continued): Composite Samples Multielement 4-Acid Digest Results – Ndongo East

APPENDIX 1

JORC CODE 2012 EDITION
TABLE 1 REPORTING OF EXPLORATION RESULTS – NAMDINI PROJECT

Section 1 – Sampling Technique and Data

Criteria	JORC Code Explanation
Sampling techniques	Nature and quality of sampling (e.g. cut channels, random ch measurement tools appropriate to the minerals under investi handheld XRF instruments, etc.). These examples should no sampling. Include reference to measures taken to ensure sample repre measurement tools or systems used. Aspects of the determination of mineralisation that are Mater In cases where ‘industry standard’ work has b ‘reverse circulation drilling was used to obtain 1 m sa produce a 30 g charge for fire assay’). In other cases where there is coarse gold that has inherent sampling proble types (e.g. submarine nodules) may warrant disclosure of de
Drilling techniques	Drill type (e.g. core, reverse circulation, open‐hole ha etc.) and details (e.g. core diameter, triple or standard tube, or other type, whether core is oriented and if so, by what me

	Method of recording and assessing core and chip sample re
Drill sample recovery	
	Measures taken to maximise sample recovery and ensure re
	Whether a relationship exists between sample recovery and occurred due to preferential loss/gain of fine/coarse material
	Whether core and chip samples have been geologically and support appropriate Mineral Resource estimation, mining stu
Logging	
	Whether logging is qualitative or quantitative in nature. Core
	The total length and percentage of the relevant intersections
	If core, whether cut or sawn and whether quarter, half or all
	If non‐core, whether riffled, tube sampled, rotary spli
	For all sample types, the nature, quality and appropriateness
Sub‐sampling techniques and sample preparation	Quality control procedures adopted for all sub‐sampl samples.
	Measures taken to ensure that the sampling is representativ including for instance results for field duplicate/second&#820
	Whether sample sizes are appropriate to the grain size of th

Quality of Assay data and laboratory tests	The nature, quality and appropriateness of the assaying and technique is considered partial or total. For geophysical tools, spectrometers, handheld XRF instrum the analysis including instrument make and model, reading t derivation, etc. Nature of quality control procedures adopted (e.g. standards and whether acceptable levels of accuracy (i.e. lack of bias)
Verification of sampling and assaying	The verification of significant intersections by either indepen The use of twinned holes. Documentation of primary data, data entry procedures, data electronic) protocols. Discuss any adjustment to assay data.
Location of data points	Accuracy and quality of surveys used to locate drill holes (co mine workings and other locations used in Mineral Resource Specification of the grid system used. Quality and adequacy of topographic control.
Data spacing and distribution	Data spacing for reporting of exploration results. Whether the data spacing and distribution is sufficient to esta continuity appropriate for the Mineral Resource and Ore Res applied. Whether sample compositing has been applied.
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sam which this is known, considering the deposit type. If the relationship between the drilling orientation and the ori considered to have introduced a sampling bias, this should b

Sample security	he measures taken to ensure sample security.
Audits or reviews	The results of any audits or reviews of sampling techniques

Section 2 – Reporting of Exploration Results

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

Criteria	JORC Code Explanation
Mineral Tenement and Land Status	Type, name/reference number, location and ownersh parties including joint ventures, partnerships, overridi wilderness or national park and environmental setting The security of the tenure held at the time of reportin license to operate in the area.
Exploration Done by Other Parties	Acknowledgment and appraisal of exploration by oth
Geology	Deposit type, geological setting and style of mineralis
Drill hole information	A summary of all information material to the understa the following information for all Material drill holes: • Easting and northing of the drill hole collar • Elevation or RL (Reduced Level – elevation above sea level in meters) of the d • Dip and azimuth of the hole • Down hole length and interception depth • Hole length If the exclusion of this information is justified on the b exclusion does not detract from the understanding of explain why this is the case.

Data aggregation methods	In reporting Exploration Results, weighting averaging truncations (e.g. cutting of high grades) and cut&#82 Where aggregated intercepts incorporate short lengt results, the procedure used for such aggregation sho aggregations should be shown in detail. The assumptions used for any reporting of metal equ
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the r If the geometry of the mineralisation with respect to t reported. If it is not known and only the down hole lengths are (e.g. ‘down hole length, true width not known&
Diagrams	Appropriate maps and sections (with scales) and tab significant discovery being reported. These should in collar locations and appropriate sectional views.
Balanced Reporting	Where comprehensive reporting of all Exploration Re low and high grades and/or widths should be practice
Other substantive exploration data	Other exploration data, if meaningful and material, sh geological observation; geophysical survey results; g and method of treatment; metallurgical test results; b characteristics; potential deleterious or contaminating
Further Work	The nature and scale of planned further work (e.g. te – scale step – out drilling). Diagrams clearly highlighting the areas of possible ex and future drilling areas, provided this information is

APPENDIX 2

JORC CODE 2012 EDITION
TABLE 1 REPORTING OF EXPLORATION RESULTS - NDONGO EAST

Section 1 – Sampling Technique and Data

Criteria	JORC Code Explanation

	Nature and quality of sampling (e.g. cut channels, random ch measurement tools appropriate to the minerals under investi handheld XRF instruments, etc.). These examples should no sampling.
	Include reference to measures taken to ensure sample repre measurement tools or systems used.
Sampling techniques	Aspects of the determination of mineralisation that are Mater
	In cases where ‘industry standard’ work has b ‘reverse circulation drilling was used to obtain 1 m sa produce a 30 g charge for fire assay’). In other cases where there is coarse gold that has inherent sampling proble types (e.g. submarine nodules) may warrant disclosure of de
Drilling techniques	Drill type (e.g. core, reverse circulation, open‐hole ha etc.) and details (e.g. core diameter, triple or standard tube, or other type, whether core is oriented and if so, by what me

	Method of recording and assessing core and chip sample re
Drill sample recovery	
	Measures taken to maximise sample recovery and ensure re
	Whether a relationship exists between sample recovery and occurred due to preferential loss/gain of fine/coarse material
	Whether core and chip samples have been geologically and support appropriate Mineral Resource estimation, mining stu
Logging	
	Whether logging is qualitative or quantitative in nature. Core
	The total length and percentage of the relevant intersections

	If core, whether cut or sawn and whether quarter, half or all
	If non‐core, whether riffled, tube sampled, rotary spli
	For all sample types, the nature, quality and appropriateness
Sub‐sampling techniques and sample preparation	
	Quality control procedures adopted for all sub‐sampl samples.
	Measures taken to ensure that the sampling is representativ including for instance results for field duplicate/second&#820
	Whether sample sizes are appropriate to the grain size of th

	The nature, quality and appropriateness of the assaying and technique is considered partial or total.
Quality of Assay data and laboratory tests	
	For geophysical tools, spectrometers, handheld XRF instrum the analysis including instrument make and model, reading t derivation, etc.
	Nature of quality control procedures adopted (e.g. standards and whether acceptable levels of accuracy (i.e. lack of bias)

Verification of sampling and assaying	The verification of significant intersections by either indepen The use of twinned holes. Documentation of primary data, data entry procedures, data electronic) protocols. Discuss any adjustment to assay data.
Location of data points	Accuracy and quality of surveys used to locate drill holes (co mine workings and other locations used in Mineral Resource Specification of the grid system used. Quality and adequacy of topographic control.
Data spacing and distribution	Data spacing for reporting of exploration results. Whether the data spacing and distribution is sufficient to esta continuity appropriate for the Mineral Resource and Ore Res applied. Whether sample compositing has been applied.
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sam which this is known, considering the deposit type. If the relationship between the drilling orientation and the ori considered to have introduced a sampling bias, this should b
Sample security	he measures taken to ensure sample security.
Audits or reviews	The results of any audits or reviews of sampling techniques

Section 2 – Reporting of Exploration Results

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

Criteria	JORC Code Explanation
Mineral Tenement and Land Status	Type, name/reference number, location and ownersh parties including joint ventures, partnerships, overridi wilderness or national park and environmental setting The security of the tenure held at the time of reportin license to operate in the area.
Exploration Done by Other Parties	Acknowledgment and appraisal of exploration by oth
Geology	Deposit type, geological setting and style of mineralis
Drill hole information	A summary of all information material to the understa the following information for all Material drill holes: • Easting and northing of the drill hole collar • Elevation or RL (Reduced Level – elevation above sea level in meters) of the d • Dip and azimuth of the hole • Down hole length and interception depth • Hole length If the exclusion of this information is justified on the b exclusion does not detract from the understanding of explain why this is the case.
Data aggregation methods	In reporting Exploration Results, weighting averaging truncations (e.g. cutting of high grades) and cut&#82 Where aggregated intercepts incorporate short lengt results, the procedure used for such aggregation sho aggregations should be shown in detail. The assumptions used for any reporting of metal equ
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the r If the geometry of the mineralisation with respect to t reported. If it is not known and only the down hole lengths are (e.g. ‘down hole length, true width not known&
Diagrams	Appropriate maps and sections (with scales) and tab significant discovery being reported. These should in collar locations and appropriate sectional views.
Balanced Reporting	Where comprehensive reporting of all Exploration Re low and high grades and/or widths should be practice

Other substantive exploration data	Other exploration data, if meaningful and material, sh geological observation; geophysical survey results; g and method of treatment; metallurgical test results; b characteristics; potential deleterious or contaminating
Further Work	The nature and scale of planned further work (e.g. te – scale step – out drilling). Diagrams clearly highlighting the areas of possible ex and future drilling areas, provided this information is