

**PRESS RELEASE** ASX/TSX: CDV 31 July 2019 2019-14

# **QUARTERLY ACTIVITIES FOR THE PERIOD ENDED 30 JUNE 2019**

Cardinal Resources Limited (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 June 2019.

# **HIGHLIGHTS**

- On April 3, 2019 the Company announced an updated Ore Reserve for the Namdini Gold Project which included a Mineral Resource update and optimisation studies to improve the level of definition of the current pit design.
- On April 10, 2019 the Company announced its Feasibility Study status and project finance updates. The Company remains on schedule for delivery of the Feasibility Study by end of Q3 2019.
- On June 4, 2019 the Company announced positive metallurgical updates on the Namdini Gold Project as a result of investigation into the utilisation of the AachenTM process, which has demonstrated potential for material improvements to the projects economics, driven by potential for reduction in both operating costs and capital costs. Further testwork is continuing.

# **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.

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).

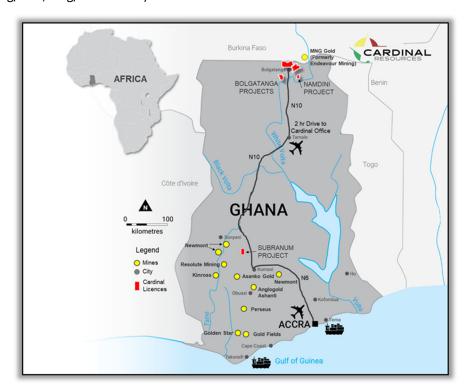


Figure 1: Cardinal Resources Tenements in Ghana







# Subsequent to end of Quarter

- On July 10, 2019 the Company reported further shallow drill results at the Ndongo East discovery located approximately 24km north and within hauling distance of the Company's Namdini Gold Project. The close spaced drilling has delineated a well-defined mineralised zone over a strike length of 150 metres, within the initial 450 metre mineralised discovery zone.
- On July 12, 2019 the Company held a public hearing and a presentation for the Traditional Paramount Chief.
- On July 16, 2019 the Company announced the results of an infill program for the Namdini Deposit. The close spaced infill drilling, along with the previous Grade Control program within the proposed starter pit, confirms the robustness of the Namdini Mineral Resource.

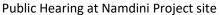
# Successful Public Hearing – Strong local support for the Namdini Project

Under the supervision of Ghana Government Ministries, Environmental Protection Agency and The Minerals Commission, Cardinal held a public hearing for the Namdini Gold project which exceeded expectations in relation to the current and future support of the Namdini Project proceeding into mine development.

Local invited dignitaries and participants from all the surrounding communities attended the public hearing which was well received. There were no objections or obstructions to the Namdini Project proceeding.

A separate presentation was conducted for the Traditional Paramount Chief of the Upper East Region, Tongraan Kugbilsong Nanlebegtang, and his Sub-Chiefs within the Talensi District, where the Namdini Project is located. This was also successful in garnishing continued support for the Namdini Project.







**Traditional Paramount Chief Presentation** 







# 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<sup>2</sup> 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.

# **Mineral Resource and Ore Reserves Update**

The Mineral Resource incorporates the results from all resource drilling to February 5, 2019 comprising 175 HQ diamond core holes and 151 RC drill holes totalling 87,140 metres. (ASX / TSX Press Release April 3 and April 18, 2019)

Reverse circulation drilling (nominally 5% inch diameter) was generally 200 metres or less in depth.

Diamond drilling was HQ in both weathered and fresh rock. Most diamond holes and RC holes were downhole surveyed at intervals of generally 30 metres. All HQ core was orientated.

The resource drilling comprises east-west trending traverses of easterly inclined holes. Hole spacing varied from around 12.5 by 25 metres in shallow portions of the southern part of the deposit to around 50 by 50 metres and broader in the north and at depth.

Tables 1 and 2 highlight the Mineral Resource estimation reported at a 0.5 g/t Au cut-off grade. Currently, the 0.5 g/t Au cut-off grade approximates an operational parameter that the Company believes to be applicable. This is in accordance with the guidelines of Reasonable Prospects for Eventual Economic Extraction ("RPEEE") per the Canadian Institute of Mining, Metallurgy and Petroleum "CIM Definition Standards for Mineral Resources and Mineral Reserves" (CIM, 2014) and the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code 2012). The effective date of the Mineral Resource estimate is the April 3, 2019.

All figures in Tables 1 and 2 have been rounded to reflect the relative precision of the estimates and to include rounding errors. Mineral Resources are inclusive of Ore Reserves.

Mineral Resource Category	Material Type	Tonnes (Mt)	Gold Grade (g/t Au)	Contained Gold (Moz)
Measured	Oxide	1.1	1.23	0.04
Measured	Fresh	6.4	1.33	0.27
Measured Resource	Total	7.5	1.31	0.32
Indicated	Oxide	3.3	1.08	0.11
Indicated	Fresh	171	1.11	6.10
Indicated Resource	Total	174	1.11	6.21
Measured and Indicated	Oxide	4.40	1.12	0.16
Measured and Indicated	Fresh	177	1.12	6.38
Measured and Indicated	Total	182	1.12	6.53

Table 1: Namdini Measured and Indicated Mineral Resource estimate at 0.5g/t Au cut off – April 3, 2019







Mineral Resource Category	Туре	Tonnes (Mt)	Gold Grade (g/t Au)	Contained Gold (Moz)
Inferred	Oxide	0.04	1.0	0.001
Inferred	Fresh	12	1.2	0.46
Inferred Resource	Total	12	1.2	0.46

Table 2: Namdini Mineral Resource Inferred estimate at 0.5 g/t Au cut off - April 3, 2019

Ore Reserves were estimated for the Namdini Gold Project by Golder Associates, which is summarised in Table 3. The total Proved and Probable Ore Reserve is estimated at 138.6Mt at 1.13g/t Au with a contained gold content of 5.1 Moz at 0.5 g/t Au cut off.

The Ore Reserve for the Project is reported according to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, JORC Code 2012 and Canadian Institute of Mining, Metallurgy and Petroleum "CIM Definition Standards for Mineral Resources and Mineral Reserves" (CIM, 2014). The Mineral Resource was converted after applying Modifying Factors. The Proved and Probable Ore Reserve estimate is based on the Mineral Resource classified as Measured and Indicated. Table 3 presents a summary of the Ore Reserves on a 100% Project basis.

Ore Reserve Category	Туре	Tonnes (Mt)	Gold Grade (g/t)	Contained Gold (Moz)
Proved	Oxide	1.0	1.21	0.1
Proved	Fresh	6.4	1.33	0.3
Proved Reserve	Total	7.4	1.31	0.4
Probable	Oxide	3.0	1.08	0.1
Probable	Fresh	128.2	1.13	4.6
Probable Ore Reserve	Total	131.2	1.12	4.7
Proved and Probable	Oxide	4.1	1.11	0.2
Proved and Probable	Fresh	134.5	1.13	4.9
Proved and Probable	Total	138.6	1.13	5.1

Table 3: Summary of Namdini's Proved and Probable Ore Reserve estimate at 0.5 g/t Au cut off – April 3, 2019.

# Table 3 Notes:

- 1. The Ore Reserve reported in accordance with JORC Code 2012 guidelines and Canadian Institute of Mining, Metallurgy and Petroleum "CIM Definition Standards for Mineral Resources and Mineral Reserves" (CIM, 2014).
- The Ore Reserve was evaluated using a gold price of USD \$1,300 / oz with USD \$1,225 / oz optimised pit chosen for Ore Reserve
  pit design to maximise cash flow.
- 3. The Ore Reserve was evaluated using an average cut-off grade of 0.5 g/t Au.
- 4. Ore block grade and tonnage dilution was incorporated through the use of an MIK recoverable resource estimation model which was demonstrated to incorporate an expected level of equivalent ore loss and dilution for the scale of mining envisaged.
- 5. All figures are rounded to reflect appropriate levels of confidence. Apparent differences may occur due to rounding.

The mine design and Ore Reserve estimate is based on the Mineral Resource model of April 3, 2019.

Trial open pit optimisations were run in Whittle  $4X^{TM}$  software to define the base of potentially economic material. Four cut back pits were then selected and full mine designs applied.

The Measured and Indicated Mineral Resource are inclusive of those Mineral Resources modified to produce the Ore Reserves.







# **Project Development and Finance Update**

Project Finance Adviser, Cutfield Freeman & Co, has been working 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 of the Feasibility Study.

There has been substantial interest received from a range of potential financiers, providing the Company with a strong degree of confidence that it will be capable of securing the required project funding package on favourable terms.

Cardinal's Project Finance team is continuing to evaluate Indicative Term Sheets from a number of project financiers including traditional senior debt lenders to possible corporate scenarios.

# **Project Development Partners**

COMPANY	ROLE
Lycopodium	Feasibility Study Managers. Process plant and associated infrastructure. Capital and Process Operating cost estimation.
Golder Associates	Mine design, planning, optimisation and scheduling. Geotechnical, Hydrology and Hydrogeological engineering. Mine operational costs and compilation of the JORC (2012) and NI 43-101 Technical reports.
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 development.
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 <sup>™</sup> 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**

Cardinal has been working with Maelgwyn Mineral Services Africa (MMSA) for approximately two years. Initial positive leach results were returned from MMSA laboratories in South Africa from pilot scale testwork utilising the Aachen<sup>TM</sup> process which has led the Company to further the testwork as results were highly encouraging. These results were announced in ASX/TSX announcement June 4, 2019. Aachen<sup>TM</sup> is a relatively simple, proven process being used by several gold producers. These operations have consistently demonstrated an uplift in gold recoveries.

Testwork on integrating the Aachen<sup>TM</sup> process into the Namdini flowsheet demonstrated potential to increase gold recovery for the Life of Mine study and also suggested an increase in the regrind size from sub 10 microns ( $\mu$ m) into the coarser range of 15 to 45 microns ( $\mu$ m) for certain lithologies. Further substantial testwork is ongoing to consider the optimal regrind size and target recovery. A detailed cost benefit analysis is underway as part of the programme.

# **Feasibility Study Update**

Cardinal continued with its feasibility study engineering consultants in detailing the Namdini Gold Project design for further mining, processing and infrastructure definition. A number of site visits have been held to further define:

- Infrastructure (Knight Piesold):
  - Further geotechnical testing of the waste dump, tailings storage facility, water storage facility, air strip and access road;
    - Geological testing included test pitting of 124 different locations within the project area
  - A walkover survey of site was carried out in order to inspect the existing terrain in relation to the proposed infrastructure developments and potential borrow sources. A series of observations and photographs were collected during the walkover/inspection of the water storage facility site, airstrip site, access road alignment, potential drainage medium and concrete aggregate sources, process plant site and open pit footprint;
  - Bulk samples of sand were collected from a tributary of the White Volta River approximately 5km from Namdini in order to assess its suitability for use as drainage medium in construction of the TSF;
  - Three existing rock quarries located near to the town of Pwalugu 26 km from the Namdini Project on Highway 10 to Bolgatanga were visited in order to inspect the quarry operations, to sample the quarry products for suitability testing for use as fine and coarse concrete aggregate and to source typical prices for the various construction products; and
  - Representative samples of in-situ soils were collected from test pits and boreholes for lab testing.
- In-country Construction Capability (Lycopodium):
  - Meeting with in-country contractors and suppliers to ascertain capacity, capability and workload with the intent to select potential contractors and commence prequalification;
  - Improve understanding of local procurement availability;
  - Gain detailed insight into the local and government authorities involved with the project approval process regarding construction;
  - Investigate the Government's list of local procurement suppliers suitable for the Namdini Gold Project;
  - Perform due diligence on construction plant and equipment availability in-country; and
  - Ascertain transportation and logistics requirements.
- Maelgwyn Minerals South Africa (MMSA) Visit (Lycopodium and Cardinal Team):
  - Visits to the MMSA laboratory facilities in Johannesburg, South Africa and three mining operations where the Aachen™ process is currently operating occurred in March and June 2019;
  - These visits were highly informative and encouraging in demonstrating the Aachen™ scale up success from pilot scale laboratory testwork into operational reality and its applicability to Namdini; and
  - MMSA offer a full installation and maintenance lease programme for their units, which have been proven to be successful by a number of gold producers.







The mining design at Namdini has focused on maximising value in extracting and processing the higher-grade areas of the pit during the initial years of production. Multiple mining schedules are being assessed with the best case being selected for amongst other things, profitability as well as sustainability.

The Namdini flowsheet design has been updated to include the Aachen<sup>™</sup> unit which will be installed as part of the pre-leach aeration tank after the regrind circuit. The unit is effortlessly installed and requires a minimum footprint.

The FS engineering design for the process facility and associated infrastructure is nearing completion. Cardinal's engineering consultants, Lycopodium, have solicited detailed quotations and tenders for a majority of the equipment and materials in the design. Local companies have been approached to provide pricing for potential supply of construction materials and labour.

The capital and operating cost estimates are being populated with all recent tenders, quotations and data which will be developed into fully costed estimates, delivering a well-rounded feasibility study.

# **Environmental and Social Update**

Developing a successful and sustainable gold mine is a key focus for Cardinal, as part of our Corporate Social Responsibility in ensuring local and national participation, social and community uplift, whilst ensuring environmental rehabilitation and where possible enhancement. Cardinal currently employs three local consultants for its Environment Protection Agency (EPA) approval process and Relocation Action Plan (RAP) process. All environmental applications have been submitted and public hearings were recently concluded with no objections and positive feedback. It is anticipated that the necessary approvals and permitting will be in place by the end of this year.

# **Project Development Timeline**

The Company continues to aim for delivery of the Feasibility Study by end of Q3 2019 upon receiving completed laboratory testwork, checks and sign-offs being delivered by Maelgwyn using its Aachen Process (ASX/TSX press release June 4, 2019).

The following schedule is subject to available funding, positive outcomes for the FS and favorable timelines for permitting;

Milestone	Target Timeline
Completion of PFS (Completed)	Q3 2018
Completion of FS	Q3 2019
Final Investment Decision	Q4 2019
Target Production Commencement	H2 2022

Table 5: Namdini Project Development Timeline

# **Namdini Drilling**

Programme	No. Holes	RC (m)	DD (m)	Total (m)	No. Samples	No. Duplicates	No. Blanks	No. Stds	Total Samples
Starter Pit Infill drilling	13	1,137	857.5	1,994.5	2,003	55	47	49	2,154
Sterilization Drilling	51	5,251	423.92	5,674.92	5,675	253	135	135	6,198
Southern Extension	3	-	597.08	597.08	605	-	15	14	634
TOTALS	67	6,388.00	1,878.5	8,266.5	8,283	308	197	198	8,986

Table 6: Namdini Infill Drilling







# Namdini Starter Pit Infill Drilling

A total of eight reverse circulation ("RC") and five diamond drill ("DD") holes were drilled on the Namdini tenement for a total of 1,994.5m with 2,154 samples, including QAQC controls, submitted to SGS Ghana laboratory for gold analysis using the Fire Assay analytical method (Table 6).

The program was successfully completed in Q2 2019. The aim of this program was to test the current Mineral Resource model (ASX/TSX Press Release April 3, 2019 and April 18, 2019) with the closely spaced drilling over a selected area within the proposed starter pit which will provide the first two to three years of mill feed.

The close spaced infill drilling programme, within the proposed starter pit, confirms the robustness of the Mineral Resource, thereby providing higher confidence in predicting operational outcomes. (please see ASX/TSX announcement July 16, 2019).

Further drilling is planned for next financial year over this starter pit area.

#### Namdini Infrastructure Sterilization Drilling

A total of 50 RC and one DD sterilization holes were drilled within Namdini Mining License for a total of 5,674.92m with 6,198 samples, including QAQC controls, submitted to Intertek Ghana laboratory for gold analysis using the Fire Assay analytical method (Table 6). No significant mineralisation was intersected.

This drilling was conducted over the northern area of the mining lease and also covered the proposed plant area.

Further drilling is planned for next financial year over other proposed infrastructure areas to assess the suitability of tails storage areas and waste / low grade stockpile dumps and to ensure that potential mineralisation is not sterilized by construction of any infrastructure.

#### Namdini Southern Extension Drilling

Three DD holes were completed in the southern extension area of the Namdini deposit for a total of 597.08m with 634 samples, including QAQC controls, submitted to SGS Ghana laboratory for gold analysis using the Fire Assay analytical method (Table 6). Assays results for this drilling are still pending and the results will be analyzed in Q3 2019.

Drilling in this area was to determine whether the mineralisation extended to the south of the current planned open pit. Further drilling is planned during this current quarter.

Lithologies encountered included metasediments and diorites with minor metavolcanics and thin granitoid slivers.







# **REGIONAL EXPLORATION UPDATE**

The Company has two exploration projects: The Bolgatanga Project which includes the Bongo, Kungongo and Ndongo Prospecting License Areas (Figure 2) and the Subranum Project located in southwest Ghana (Figure 1). No exploration activities were completed on the Subranum project during this quarter.

The main focus of the Company's DD and RC drilling was on the highly prospective areas along the Nangodi Shear Zone (within Ndongo) during this quarter. Detailed ground geophysical surveys were also ongoing over the Ndongo License area during the quarter. During the first six months of 2019 Cardinal reported several intersections of highgrade gold at its new Ndongo East discovery within the Ndongo License (refer to news releases dated January 23, 2019 and March 27, 2019).

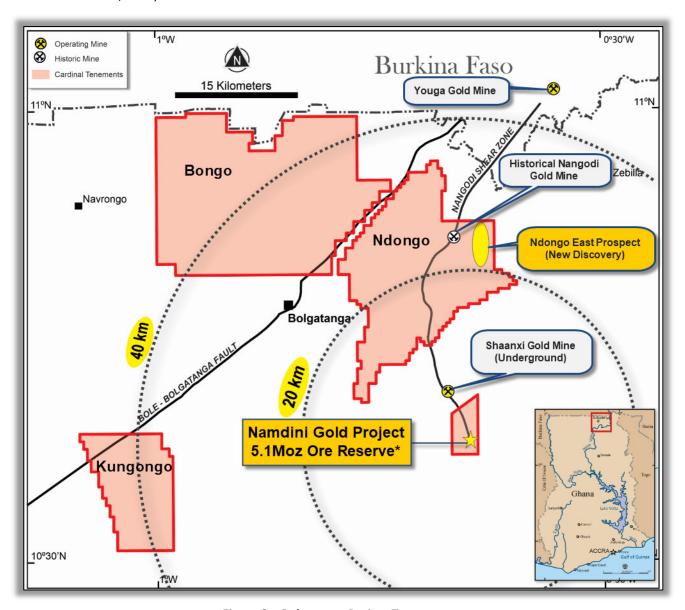


Figure 2: Bolgatanga Project Tenements

\*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 cutoff







#### **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 295km<sup>2</sup> (Figure 2). Exploration has defined seven prospects (Figure 3) totalling 70km in strike length only 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 2). In addition, there are numerous historic shallow artisanal workings along many parts of this shear zone.

# Ndongo East Prospect

A total of 13 DD holes were drilled on the Ndongo East Prospect during the quarter for a total of 817.56m with 872 samples, including QAQC controls, submitted to SGS Ghana analytical laboratory for analysis for gold using the Fire Assay analytical method (Table 7). Please see ASX/TSX announcement March 27, 2019.

Prospect	Drill Method	No. Holes	Total (m)	No. Samples	Duplicates	Blanks	Stds	Total Samples
Ndongo East	DD	13	817.56	831	-	19	22	872

Table 7: Exploration Drilling for Q2 2019

The Ndongo East Prospect is located within NE-SW trending Birimian metavolcanics and metasediments.

During this quarter, a recently completed diamond drilling program has intercepted further high-grade gold zones (ASX/TSX release July 10, 2019) (Figure 4). Results provide further confidence in the potential to define high grade satellite pits within hauling distance of the Namdini Gold Project.

Currently, two diamond rigs continue to test the strike and depth extents of the mineralised system of this prospect. Geophysical surveys and auger soil drilling programmes are underway to identify additional drill targets within the much broader target area spanning approximately 7km.

Best intercepts in the new holes reported this quarter include:

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

Gold mineralisation at Ndongo East is confined to specific gold—bearing, pyrite-silica-ankerite carbonate altered, shear zones which dip to the northwest. Drilling indicates two orientations to the mineralisation, namely a steeply-dipping northwest orientation and a shallower west-southwest plunging orientation.

A marker horizon comprising a very narrow, thinly bedded, black pyritic mudstone has been observed to occur at the base of the mineralised intersections within the metavolcanics and could mark a hiatus in the continuation of volcanic activity in the area. Although this marker horizon appears to be unrelated to mineralisation within the metavolcanics, it will be a very useful marker as more shallow diamond drilling is completed further along strike.

The mineralised system is open along a northeast-southwest strike and at depth with multiple mineralised intersections. The high-grade mineralised structures have been tested to a shallow depth of approximately 70m vertically below surface.







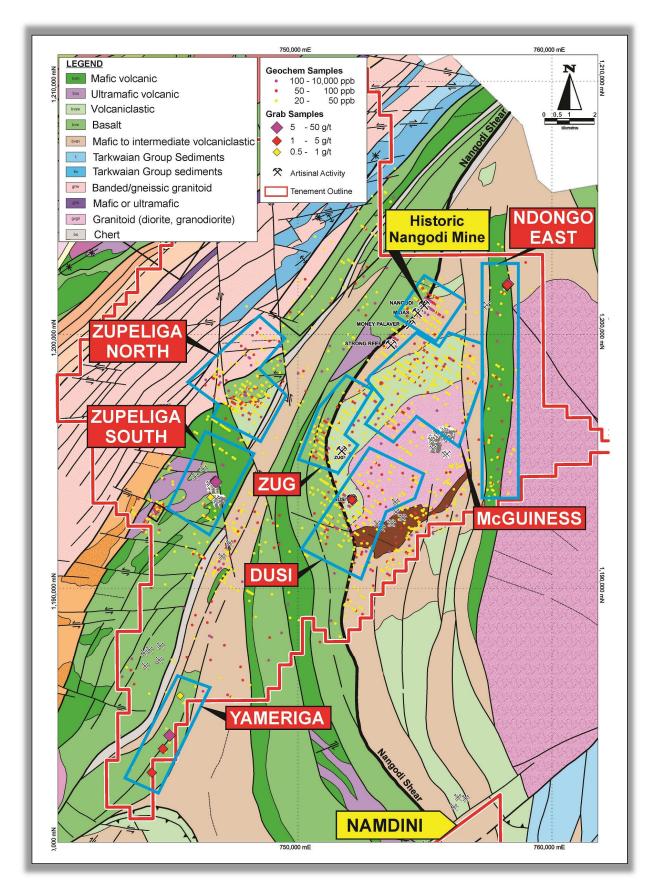


Figure 3: Ndongo Prospecting License showing local prospects







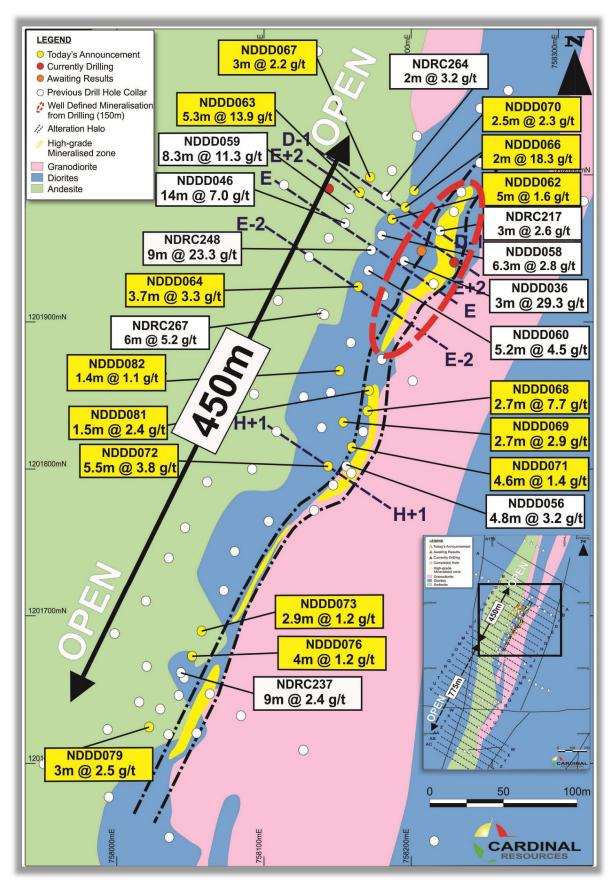


Figure 4: Ndongo East Prospect with drill locations showing NE-SW mineralised structures open along strike.







# **Kungongo Tenement**

The Kungongo License is located in northeast Ghana some 45km west of the Company's Namdini Gold Project. The License covers an area of 122 km<sup>2</sup> and is a renewable Exploration License (Figure 2).

No exploration activities were completed on this tenement during the quarter.

#### **Bongo Tenement**

The Bongo Licence covers an area of 453 km<sup>2</sup> 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 2).

No exploration activities were completed on this tenement during the quarter.

#### **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.

# **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 June 2019.

Tenement	License Status	Ref	Not e	Interest Acquired During Quarter	Interest Divested During Quarter	Interest Held at End of Quarter
Ghana						
Bolgatanga Project						
Ndongo	Prospecting	PL9/13,		-	-	100%
		PL9/19,				
		PL9/22 &	=			
		PL936				
Kungongo	Prospecting	RL9/28	-	-	-	100%
Bongo	Prospecting	PL9/29,		-	-	100%
		PL9/37 &	-			
		PL9/38				
Namdini Project						
Namdini	Mining License	LVB14619/0		-	-	100%
		9	_			
Subranum Project						
Subranum	Prospecting	PL/309	-	-	-	100%







# **CAPITAL STRUCTURE**

As at 30 June 2019 the Company had the following capital structure;

Capital Structure	Listed	Unlisted	Total
Fully Paid Ordinary Shares (CDV)	382,924,966	-	382,924,966
Options Ex. \$0.15 on or before 30 Sep 2019	110,371,935	-	110,371,935
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 June 2019 was approximately AU\$18.7 million.

During the September 2019 quarter the Company has 110,371,935 Listed Options expiring, the Listed Options have an exercise price of \$0.15 per share (closing share price at 30 July 2019 was \$0.375).

Should all the Listed Options be exercised the Company would receive AU\$16.5 million.

# **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.

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.

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# **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 Limited, 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".

Scientific and technical information contained in this press release pertaining to the Aachen<sup>TM</sup> was reviewed by Mr. Daryl Evans, Independent Metallurgical Operations Pty Ltd (IMO), who is a 'qualified person' as defined by National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI43-101"). Mr. Evans holds a Qualified Professional status being a fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM). IMO is an independent consulting firm appointed by Cardinal. IMO and Mr. Evans consent to the inclusion of the matters in this report of the statements based on the information in the form and context in which it appears.

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:

0	16 July 2019	Cardinal's Starter Pit Infill Drilling Results
0	10 July 2019	Cardinal Reports Further Shallow High-Grade Gold
0	04 June 2019	Positive Metallurgical Update on the Namdini Project
0	18 April 2019	Addendum to Namdini Ore Reserve Press Release
0	10 April 2019	Feasibility Study and Project Finance Updates
0	03 April 2019	Cardinal's Namdini Ore Reserve Now 5.1 Moz
0	27 March 2019	Cardinal Intercepts High-Grade Shallow Gold at Ndongo East
0	23 Jan 2019	Cardinal Hits More High-Grade Shallow Gold at Ndongo East
0	28 Nov 2018	New Drill Season hits high-grade shallow gold at Ndongo East
0	18 Sept 2018	Cardinal Namdini Pre-Feasibility Study 4.76Moz Ore Reserve
0	29 Aug 2018	Cardinal Extends Ndongo East Discovery Strike Length
0	31 July 2018	Cardinal Executes U\$5 Million Term Sheet with Sprott
0	16 July 2018	Cardinal Makes New Gold Discovery at Ndongo East
0	28 May 2018	Encouraging First Pass Gold Results at Ndongo
0	19 April 2018	Technical Report on Namdini Gold Project Filed on SEDAR
0	04 April 2018	First Pass Regional Exploration Drilling Underway
0	05 Mar 2018	Cardinal Upgrades Indicated Mineral Resource to 6.5Moz
0	22 Feb 2018	Cardinal Infill Drilling Results Returned
0	05 Feb 2018	Namdini Gold Project Preliminary Economic Assessment







o 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 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.





+Rule 5.5

# **Appendix 5B**

# Mining exploration entity and oil and gas exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/13, 01/09/16

# Name of entity

Cardinal Resources Limited	
ABN	Quarter ended ("current quarter")
56 147 325 620	30 June 2019

Cons	solidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
1.	Cash flows from operating activities		
1.1	Receipts from customers	-	<b>-</b>
1.2	Payments for		
	(a) exploration & evaluation	(3,835)	(13,941)
	(b) development	-	-
	(c) production	-	-
	(d) staff costs	(570)	(1,967)
	(e) administration and corporate costs	(966)	(4,293)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	114	323
1.5	Interest and other costs of finance paid	(480)	(1,602)
1.6	Income taxes paid	-	-
1.7	Research and development refunds	-	-
1.8	Other (provide details if material) –		
	VAT/GST/Foreign Exchange	(529)	(1,556)
1.9	Net cash from / (used in) operating activities	(6,266)	(23,036)

2.	Cash flows from investing activities		
2.1	Payments to acquire:		
	(a) property, plant and equipment	(259)	(699)
	(b) tenements (see item 10)	-	-

<sup>+</sup> See chapter 19 for defined terms

Page 2

Cons	olidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
	(c) investments	-	-
	(d) other non-current assets	-	-
2.2	Proceeds from the disposal of:		
	(a) property, plant and equipment	-	-
	(b) tenements (see item 10)	-	-
	(c) investments	-	-
	(d) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
2.6	Net cash from / (used in) investing activities	(259)	(699)

3.	Cash flows from financing activities		
3.1	Proceeds from issues of shares	-	-
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	65	586
3.4	Transaction costs related to issues of shares, convertible notes or options	-	-
3.5	Proceeds from credit facility, net of costs	-	33,653
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
3.10	Net cash from / (used in) financing activities	65	34,239

4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	24,985	7,294
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(6,266)	(23,036)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(259)	(699)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	65	34,239

<sup>+</sup> See chapter 19 for defined terms

1 September 2016

Cons	olidated statement of cash flows	Current quarter \$A'000	Year to date (12 months) \$A'000
4.5	Effect of movement in exchange rates on cash held	211	938
4.6	Cash and cash equivalents at end of period	18,736	18,736

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	4,301	283
5.2	Call deposits	14,435	24,702
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	18,736	24,985

6.	Payments to directors of the entity and their associates	Current quarter \$A'000
6.1	Aggregate amount of payments to these parties included in item 1.2	320
6.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-

6.3 Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2

N/A		
IN/A		

7.	Payments to related entities of the entity and their associates	Current quarter \$A'000
7.1	Aggregate amount of payments to these parties included in item 1.2	-
7.2	Aggregate amount of cash flow from loans to these parties included in item 2.3	-

7.3 Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2

N/A		

<sup>+</sup> See chapter 19 for defined terms

8.	Financing facilities available  Add notes as necessary for an understanding of the position	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
8.1	Loan facilities	\$37,193	\$37,193
8.2	Credit standby arrangements	-	-
8.3	Other (please specify)	-	-

8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.

Please see press release dated 31 July 2018 for more information.

9.	Estimated cash outflows for next quarter	\$A'000
9.1	Exploration and evaluation	1,061
9.2	Development	4,210
9.3	Production	-
9.4	Staff costs	1,164
9.5	Administration and corporate costs	1,339
9.6	Other (provide details if material)	-
9.7	Total estimated cash outflows	7,774

10.	Changes in tenements (items 2.1(b) and 2.2(b) above)	Tenement reference and location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
10.1	Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced	N/A	N/A	N/A	N/A
10.2	Interests in mining tenements and petroleum tenements acquired or increased	N/A	N/A	N/A	N/A

<sup>+</sup> See chapter 19 for defined terms

# **Compliance statement**

This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.

2 This statement gives a true and fair view of the matters disclosed.

Sign here: Sarah Shipway Date: 31 July 2019

**Company Secretary** 

Print name: Sarah Shipway

#### **Notes**

- 1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
- 2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, AASB 6: Exploration for and Evaluation of Mineral Resources and AASB 107: Statement of Cash Flows apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
- 3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.

<sup>+</sup> See chapter 19 for defined terms