

**PRESS RELEASE**  
31 October 2018

ASX/TSX: CDV  
2018-20

## **QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 30 SEPTEMBER 2018**

**Cardinal Resources Limited** (ASX: CDV; TSX: CDV) ("**Cardinal**" or "**the Company**"), an African gold focused exploration company, is pleased to present to shareholders its Quarterly Activities report for the period ended 30 September 2018. Currently Cardinal holds four tenements within the Bolgatanga Project, with Subranum comprised of a single tenement in central Ghana (Figure 1).

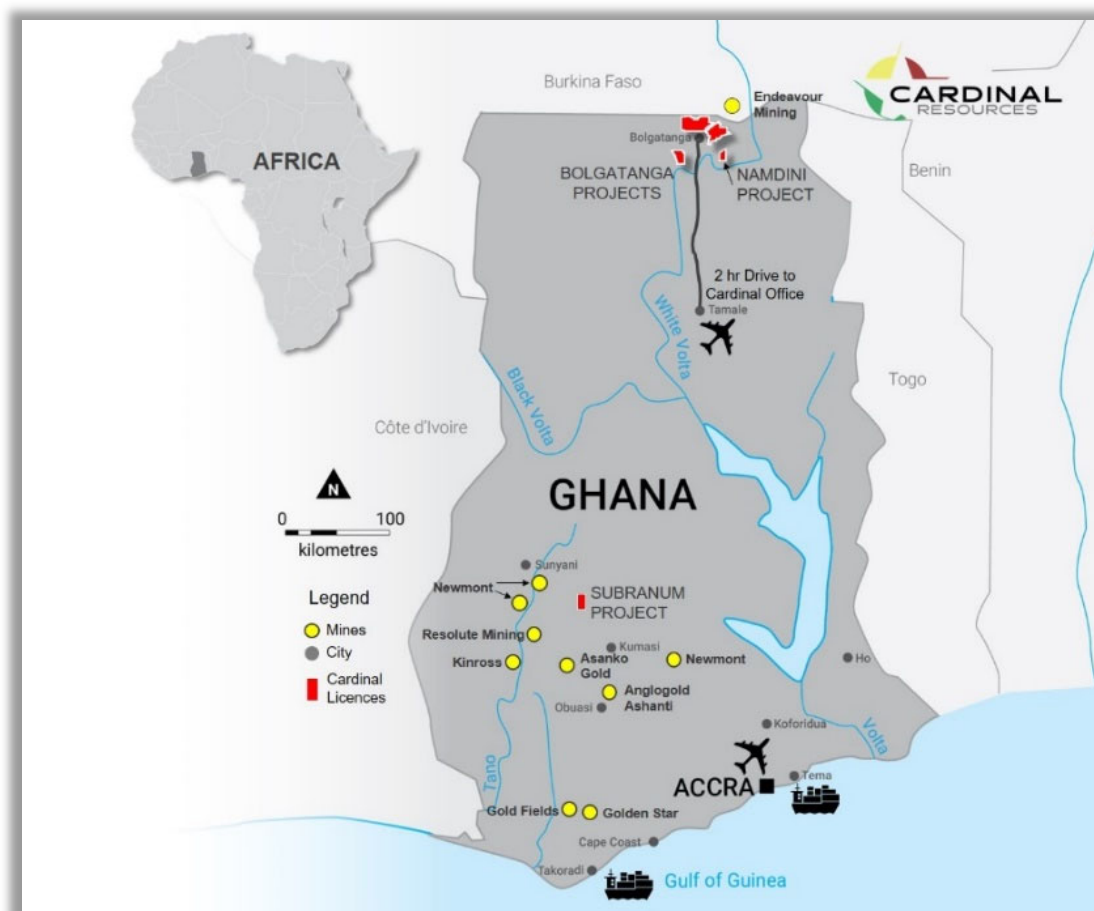
### **HIGHLIGHTS**

- On September 28, 2018 the Company released its annual report on activities for the financial year of 2017/2018. The financial year has seen the expansion in the Namdini Mineral Resource through infill drill programmes, Maiden Ore Reserve and initial success in greenfields exploration.
- On September 18, 2018 the Company announced the completion of the Namdini Gold Project Pre-Feasibility Report ("**PFS**") with a **Maiden Probable Ore Reserve of 4.76 Moz**. The PFS study confirmed the Namdini Project to be technically sound and viable.
- On August 29, 2018 the Company announced extensions to the Ndongo East Discovery strike length from approximately 400m to 1.2km. Additional shallow gold intersections to the exploration drill results previously announced on 16 July 2018, were located at the new Ndongo East Discovery on the Ndongo License area.
- On July 31, 2018 the Company announced that it had received investment committee approval from and executed a term sheet with Sprott Private Resource Lending (Collector), L.P. ("**Sprott**") to be provided with a US\$25 million senior secured credit facility ("**Facility**"). The Facility was subject to mutually satisfactory documentation and other customary conditions precedent and closed on 23 August 2018.
- On July 16, 2018 the Company announced that it had intersected further gold mineralisation at a new discovery named Ndongo East on its 100% owned Ndongo License, located approximately 20 km north of the Company's flagship Namdini Gold Project which has a 6.5 Moz Indicated Mineral Resource (Figure 3).

## OUTLOOK

The principal activity of the Company (and its subsidiaries) is gold exploration and mine development in Ghana. The Company holds interests in five tenements prospective for gold mineralisation in Ghana in two NE-SW trending Paleo-Proterozoic granite-greenstone belts: the Bolgatanga Project and the Namdini Gold Project ("Namdini Gold Project" or "Namdini"), which are, respectively, located within the Nangodi and Bole-Bolgatanga 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 maiden Probable Ore Reserve of **129.6 Mt** grading **1.14 g/t Au** for **4.76 Moz Au** at a 0.5 g/t Au cut-off grade. The map below shows the location of the Namdini Gold Project and the Company's other properties in Ghana.



**Figure 1: Cardinal Resources Tenements in Ghana**

The Company expects to continue to generate positive news flow from its ongoing greenfield exploration assets and Feasibility Study activities.

## THE NAMDINI GOLD PROJECT

### Property Title / Mining Lease

During the December 2017 quarter, a Large-Scale Mining Licence covering the Namdini Mining Lease was assigned 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). The Large-Scale Mining Licence, which 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 is for an initial period of 15 years and is renewable.

### Mineral Resources and Ore Reserves

In March 2018, Cardinal released an updated Mineral Resource estimate for its Namdini Gold Project in Ghana, West Africa which incorporates the results from the latest infill drilling programme completed in Q4 of 2017 which totalled approximately 15,684m within 35 drill holes.

Lower cut-off grade (Au g/t)	Million Tonnes (Mt)	Average Grade (Au g/t)	Million Ounces (Au Moz)
<b>Indicated Mineral Resources</b>			
<b>0.4</b>	210	1.0	6.9
<b>0.5</b>	180	1.1	6.5
<b>0.6</b>	152	1.2	6.0
<b>Inferred Mineral Resources</b>			
<b>0.4</b>	15	1.1	0.6
<b>0.5</b>	13	1.2	0.5
<b>0.6</b>	11	1.4	0.5

**Table 1: March 2018 MPR MIK NI 43-101 and JORC 2012 compliant Mineral Resource estimate**

#### Notes

- JORC (2012) Code was followed for the Mineral Resources. MPR has reconciled the Mineral Resources to CIM Definition Standards (2014) and there are no material differences.
- Mineral Resources are estimated at a cut-off grade of 0.5 g/t Au constrained by a preliminary pit shell.
- Incorporates drill holes completed as of February 2018.
- Numbers may not add due to rounding.

The table above (Table 1) highlights Mineral Resource estimations at a series of cut-off grades. Currently, the 0.5 g/t Au cut-off grade approximates to 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).

Lower cut-off grade (Au g/t)	Million Tonnes (Mt)	Average Grade (Au g/t)	Million Ounces (Au Moz)
<b>Probable Ore Reserve</b>			
<b>0.5</b>	129.6	1.14	4.76

**Table 2: September 2018 CIM 2014 and JORC 2012 compliant Maiden Ore Reserve estimate**

#### Notes

- The term ‘Ore Reserve’ is synonymous with the term ‘Mineral Reserve’ as used by Canadian National Instrument 43-101 ‘Standards of Disclosure for Mineral Projects’ (NI 43-101, 2014) and conforms with CIM (2014). The JORC Code (2012) is defined as an ‘acceptable foreign code’ under NI 43-101.
- The PFS referred to in this announcement is based upon a Probable Ore Reserve derived from Indicated Mineral Resources. No Inferred Mineral Resources have been included in the estimation of Ore Reserves. The Company advises that the Probable

Ore Reserve provides 100% of the total tonnage and 100% of the total gold metal underpinning the forecast production target and financial projections. No Inferred Mineral Resource material is included in the Life of Mine plan.

3. Mineral Resources are estimated at a cut-off grade of 0.5 g/t Au constrained by a preliminary pit shell.
4. Incorporates drill holes completed as of February 2018.
5. Numbers may not add due to rounding.

This Ore Reserve estimate is based on the revised Mineral Resource model referred to in the press release by Cardinal to the ASX and TSX, dated March 5, 2018 titled '*Cardinal Upgrades Indicated Mineral Resource to 6.5 Moz*' (Cardinal, 2018). Golder provided an estimate of mining, including haulage, drill and blast, rehabilitation and administration costs. Lycopodium provided processing cost estimates.

The Ore Reserve was estimated from the Mineral Resource after consideration of the level of confidence in the Mineral Resource and considering material and relevant modifying factors including mining, processing, infrastructure, environmental, legal, social and commercial factors. The Probable Ore Reserve estimate is based on Indicated Mineral Resources. No Inferred Mineral Resource was included in the Ore Reserve. The Ore Reserve represents the economically mineable part of the Indicated Mineral Resources. There is no Proved Ore Reserve since no Measured Mineral Resource has yet been defined.

## Preliminary Feasibility Study

### Highlights:

- **4.76 million ounces** from 129.6 Mt @ 1.14 g/t Au at 0.5 g/t cut-off Maiden Probable Ore Reserve estimate
- **US\$ 1,105/oz** gold price used to provide a Life of Mine (LOM) optimised pit converting **73%** of the 6.5Moz Indicated Mineral Resource to Probable Ore Reserves
- **US\$ 1,250** gold price financial model generated a **38% Post-Tax** Internal Rate of Return (IRR)
- **US\$ 599/oz** all-in sustaining costs (AISC) for the first 2.5 years inclusive of **1.8-year payback period**
- **US\$ 414M** (down from US\$ 426M) Capital development cost for the 9.5 Mtpa throughput plant
- **1.06 Moz** at **1.31 g/t Au** and strip ratio of **0.5 to 1** (waste to ore) **for first 2.5 years of production** (Starter Pit)
- **86%** Metallurgical recovery for Starter Pit and **84%** for LOM with ongoing optimisation testwork

### Study Inputs and Derivation

The Namdini Gold Project PFS is based upon the following key input parameters:

- The revised Mineral Resource model referred to in the press release by Cardinal to the ASX, dated March 5, 2018 titled '*Cardinal Upgrades Indicated Mineral Resource to 6.5 Moz*' (Cardinal, 2018), compiled by MPR Geological Consultants.
- A Probable Ore Reserve and detailed monthly mining and processing schedules, derived entirely from the Ore Reserve, produced by Golder Associates Pty Ltd ("Golder") after the application of mining parameters, ore cartage costs based on in-country contractor miner supplier inputs, processing inputs and geotechnical pit design considerations.
- Geotechnical inputs and parameters for staged pit designs from Golder (Perth).
- Process engineering design, capital and operating costs by Lycopodium Limited (Perth).
- Metallurgical recovery inputs based on test work by ALS Global (Perth) and interpreted by Independent Metallurgical Operations (IMO, Perth).
- Waste, residue and water storage design and earthworks by Knight Piésold Consulting (Perth).
- Other cost inputs e.g. power, administration and accommodation by owner's team and consultants' inputs.
- Environmental and social impact study by NEMAS Consult Pty Ltd (Ghana).
- Financial model compiled by owners' team and verified by independent accounting companies.

Unless otherwise stated, all cash flows are in US dollars and are not subject to inflation/escalation factors and all years are calendar years. This announcement has been prepared in compliance with the JORC Code (2012) and the current ASX Listing Rules and in accordance with National Instrument 43-101 – Standards of Disclosure for Mineral Projects of the Canadian Securities Administrators (CIM 2014).

Metallurgical testwork carried out to date indicates that gold can be satisfactorily recovered from Namdini ore using conventional flotation, regrind and Carbon In Leach (CIL) of the flotation concentrate. The testwork is considered sufficient to determine that the Namdini Mineral Resource represents a deposit with potential for economic extraction. Estimation of capital costs was prepared by Lycopodium for the process plant and associated infrastructure.

Golder provided open pit mine engineering services. The work comprised collation of input parameters, open pit optimisation studies, pit designs and detailed NPV optimised mine schedules. A series of shells from the open pit optimisations was selected and used to generate engineering pit designs that included a Starter Pit and Life of Mine (LOM) stages for the LOM production schedule.

The financial model was completed as a real discounted model. A LOM financial analysis was performed using the discounted cash flow (DCF) method and varying real discount rates. The financial analysis was used to determine the potential economic return of the project over the LOM.

KEY ECONOMIC RESULTS		UNIT	9.5 Mtpa
Development Capital Cost		US\$ M	414
All in Sustaining Costs (AISC) <sup>1</sup>	<i>Starter Pit</i>	US\$ / oz	<b>599</b>
	<i>Life of Mine</i>		769
Total Project Payback		Years	1.8
Pre-Tax NPV US\$ (@ 5% discount) <sup>2</sup>		US\$ M	927
Post-Tax NPV US\$ (@ 5% discount) <sup>2</sup>		US\$ M	586
Pre-Tax IRR		%	49
Post-Tax IRR		%	38

**Table 3: Financial Summary of 9.5 Mtpa (Gold Price of US\$ 1,250 / oz)**

Table 3 Notes:

<sup>1</sup> Cash Costs + Royalties + Levies + Life of Mine Sustaining Capital Costs (World Gold Council Standard)

<sup>2</sup> Royalties calculated at flat rate of 5% & corporate tax rate of 35% used; both subject to negotiation.

**STARTER PIT:****Production Summary**

KEY ESTIMATED PRODUCTION RESULTS	UNIT	9.5 Mtpa
Gold Price	US\$ / oz	1,250
Gold Produced (Average for full production years)	(koz / yr)	361
All in Sustaining Costs (AISC) <sup>1</sup>	US\$ / oz	599
Gold Head Grade (Starter Pit)	g/t Au	1.31
Reserve Mined (0.5 g/t cut-off grade)	Tonnes (Mt)	24
Gold Recovery	%	86
Waste Mined	Tonnes (Mt)	12
Strip Ratio (Starter Pit)	W:O	0.5 : 1
Starter Pit Life (Inc. Ramp up)	Years	2.5
Total Project Payback	Years	1.8

**Table 4: Starter Pit (first 2.5 years of operation) - 24 Mt @ 1.31 g/t for 1.06 Moz at 0.5 g/t cut off**

Table 4 Notes:

<sup>1</sup> Cash Costs + Royalties + Levies + Life of Mine Sustaining Capital Costs (World Gold Council Standard)**LIFE OF MINE:****Production Summary (including Starter Pit)**

MINERAL RESOURCE DATA – MARCH 2018		
Indicated Mineral Resource <sup>1</sup>	180 Mt @ 1.1 g/t for 6.5 Moz at 0.5 g/t cut off	
RESERVE DATA – SEPTEMBER 2018		
Probable Ore Reserve	129.6 Mt @ 1.14 g/t for 4.76 Moz at 0.5 g/t cut off	
KEY ESTIMATED PRODUCTION RESULTS	UNIT	9.5 Mtpa
Gold Price	US\$ / oz	1,250
Gold Produced (Average for full production years)	(koz / yr)	294
Gold Produced (Life of Mine)	(koz)	3,975
Gold Head Grade (Life of Mine)	g/t Au	1.14
Gold Recovery (Life of Mine)	%	84
Reserve Mined (0.5 g/t cut-off grade)	Tonnes (Mt)	129.6
Waste Mined	Tonnes (Mt)	181
Strip Ratio (Life of Mine)	W:O	1.4 : 1
Mine Life (Inc ramp-up and mine closure)	years	14
Development Capital Cost (Including owner’s cost and 15% contingencies)	US\$ M	414
Total Project Payback	Years	1.8

**Table 5: Life of Mine Pit**

## Table 5 Notes:

<sup>1</sup> 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).

Based upon Life of Mine production and the cost parameters, the post-tax NPV sensitivities are shown in Table 6 below for the **9.5 Mtpa** option.

POST TAX REAL DISCOUNT RATE (%)	GOLD PRICE (US\$/oz)				
	US\$ 1,150	US\$ 1,200	US\$ 1,250	US\$ 1,300	US\$ 1,350
0	682	805	<b>928</b>	1,051	1,174
5	415	501	<b>586</b>	672	758
10	251	314	<b>376</b>	439	501

**Table 6: 9.5 Mtpa Option Net Present Value and Gold Price Sensitivities**

Table 6 Note: All NPVs are post-tax values shown in US\$M

### Project Development Activities

Cardinal is progressing with its feasibility study programme to further advance the Namdini Gold Project. This consists of continuing with previously selected and newly selected consultants to assist with the phased development of the Namdini Gold Project. The consultants and their roles are tabulated below:

COMPANY	ROLE
Lycopodium Limited	Study Managers. Process plant and associated infrastructure. Capital and Operating cost estimation and input into the NI 43-101 reports
Golder Associates Pty Ltd	Mine planning and Whittle Optimisation. Pit design and mine scheduling. Geotechnical, Hydrology and Hydrogeology engineering. Responsible for the compilation of the NI 43-101 reports
Orway Minerals Consultants	Comminution data analysis and crushing and grinding circuit option study
ALS Laboratory (Perth)	Metallurgical testwork to support the process design and criteria
Knight Piésold Consulting	Tailings Storage Facility and associated infrastructure design
Independent Metallurgical Operations Pty Ltd	Metallurgical testwork analysis and process flowsheet development
MPR Geological Consultants Pty Ltd	Mineral Resource Modelling of the Namdini Deposit
Orefind Pty Ltd	Geology and deposit structural genesis
Intermine Engineering Consults Pty Ltd	Mine Schedule Optimisation
NEMAS Consult Pty Ltd	Environmental Impact Assessment Study

**Table 7: Study Team**



### Project Development Timeline

The following preliminary schedule (Table 8) is subject to available funding, positive outcomes for the PFS and DFS and favourable timelines for permitting;

Milestone	Target Timeline
Completion of PFS ( <b>Completed</b> )	Q3 2018
Completion of DFS	Q3 2019
Final Investment Decision	Q4 2019
Target Production Commencement	H1 2022

**Table 8: Namdini Project Development Timeline**

The in-situ deposit Mineral Resource Model is the basis for the mining model used for the Starter Pit and Life of Mine (LOM) pit planning and assessment reporting. The resource model has cell dimensions of 12.5m (east) by 25m (north) by 5m (elevation). The MIK adjustment assumes a moderately selective mining unit (SMU) of 10 m x 5 m x 2.5 m, which has been applied to Namdini's large-tonnage, disseminated deposit.

A gold cut-off grade of 0.5 g/t Au was applied to the mineralised material. Process costs and mining costs were supplied by independent consultants and compared with similar gold projects. Gold grades were supplied with the model as estimated proportional grades using the MIK recoverable resource estimation technique.

Metallurgical test work was used to estimate the recoverable fraction from the Oxide, Transition and Fresh ore components, with gold grade and proportion of the block at varying MIK cut-off points coded in the block model.

Using the identified marginal Cut-off Grade, the proportion of ore per parcel and gold grade above the Cut-off Grade were included within the mining model to allow export of the parcelled (ore + waste) blocks to the pit optimiser for open pit optimisation.

No consideration has been made for underground extensions of the operation in this PFS study. A minimum mining width of 60m was assumed. Mining dilution and recovery are addressed in the modelling method (MIK with variance adjustment) and the utilization of flitch mining. No Inferred Mineral Resources have been included for the PFS within the LOM planning. Mining Infrastructure requirements were assumed to be provided by the selected mining contractor with the mining performed on an outsourced basis.

Further studies are being conducted on HV power supply which include back-up power and alternative power supply opportunities. This includes assessment of the current power generation capabilities through grid connection and an independent power generation solution on the basis of an independent power producer (IPP) or build own operate transfer (BOOT) type contract structure. The first option is a total independent heavy fuel oil (HFO), Solar Photovoltaic (PV) and Battery energy storage hybrid system and the second option is a Solar PV and battery system with grid connection.

In support of the mine design, Golder has carried out a study of existing geotechnical information, reviewed information on Mineral Resource estimates, conducted a site visit and gathered detailed core logging data from specific geotechnically targeted drill locations within the project area. The life-of-mine pit design considers slope performance based on models developed from laboratory results of sampled drill core. The report presented feasibility-level slope designs based on data collected in the field and reports made available by Cardinal.

A hydrogeological fieldwork programme was undertaken comprising a hydro-census of surrounding properties to identify groundwater users. Groundwater exploration drilling of five pairs of boreholes converted to deep and



shallow monitoring wells was completed. Characterisation of groundwater quality by sampling and laboratory analysis, groundwater monitoring and hydraulic testing was completed. Development of a conceptual model for assessment of pit inflows, potential impacts on mine dewatering on local, plus regional groundwater and surface water systems, has been completed in support of the mine design.

A hydrology programme including the development of a stormwater plan and overall site water balance was also completed. Hydrological design criteria are being developed, largely based on International Finance Corporation (“IFC”) requirements.

An EIS for Namdini was filed with the Environmental Protection Agency (“EPA”). In accordance with EPA Regulations 15(1b) and (1c) of the Environmental Assessment Regulations, 1999 (LI 1652) and Ghana’s Environmental Impact Assessment (EIA) Procedures, the EPA issued a public notification on the proposed Namdini Gold Mining Project. Cardinal will submit to the Minerals Commission an updated EIS and an application for an Operating Permit for the project scale envisioned in the PFS.

The proposed mine plan is technically achievable. All technical proposals made for the operational phase involve the application of conventional technology that is widely utilised in the gold industry. Financial modelling completed as part of the PFS shows that the Project is economically viable under current assumptions. Modifying Factors (mining, processing, infrastructure, environmental, legal, social and commercial) were considered during the Ore Reserve estimation process. The PFS incorporates a number of factors and assumptions as outlined in the sections below.

The financial model was completed as a real discounted model. A LOM financial analysis was performed using the discounted cash flow (DCF) method and varying real discount rates. The financial analysis was used to determine the potential economic return of the project over the LOM.

#### **Namdini Sterilization Drilling**

A total of 22 reverse circulation (“RC”) and 6 diamond core (“DD”) holes were drilled on the Namdini tenement during the quarter with 3,452 samples, including QAQC controls, submitted to Ghana based laboratories for gold analysis using the Fire Assay analytical method (Table 9).

Prospect	Drill Method	No. Holes	Total (m)	No. Samples	Duplicates	Blanks	Stds	Total Samples
Namdini	RC Drilling	22	2,431	2,381	102	46	46	2,473
	DD Drilling	6	1441.51	923		28	28	979
<b>Total</b>		<b>28</b>	<b>3,872.51</b>	<b>3,304</b>	<b>102</b>	<b>74</b>	<b>74</b>	<b>3,452</b>

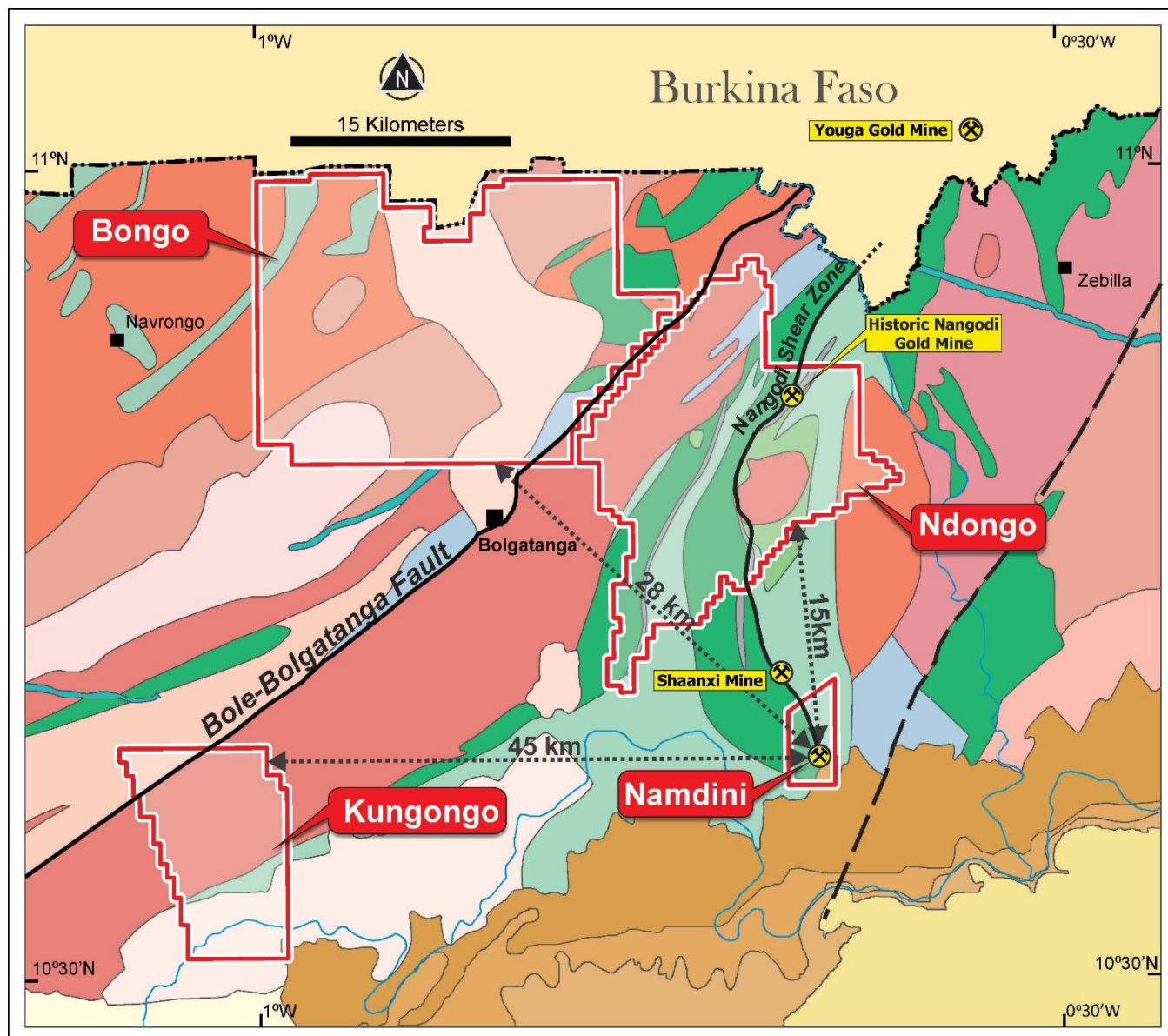
**Table 9: Namdini Sterilization Drilling for Q3 2018**

Lithologies include metavolcanics, thin granitoid slivers in the metasediments and diorite.

## REGIONAL EXPLORATION UPDATE

### ***Bolgatanga Project***

The Bolgatanga Project includes the Ndongo, Kungongo and Bongo License areas (Figure 2). The main focus of the Company's diamond (DD) and reverse circulation (RC) drilling was on the highly prospective areas along the Nangodi Shear Zone during this quarter. Detailed ground geophysical surveys were also in progress over the Ndongo and Kungongo Licenses.



**Figure 2: Bolgatanga Project Tenements**

### ***Subranum Project***

The Subranum Project is located in southwest Ghana (Figure 1). Diamond drilling was completed on this project late in the quarter and a full disclosure of results will be provided during Q4 2018.

## BOLGATANGA PROJECT

### Exploration Drilling

A total of 62 RC holes were drilled on the enlarged Ndongo License with 1 DD and 1 RC holes on Kungongo Extension during the quarter with 6,884 samples, including QAQC controls, submitted to Ghana based laboratories for analysis for gold using the Fire Assay analytical method. (Table 2).

Prospect	Drill Method	No. Holes	Total (m)	No. Samples	Duplicates	Blanks	Std's	Total Samples
<b>Ndongo</b>	RC Drilling	62	5,917	5917	291	149	147	6,504
<b>Kungongo Ext</b>	RC Drilling	1	70	70	3	2	2	77
	DD Drilling	1	289.54	290	-	6	7	303
<b>Total</b>		<b>64</b>	<b>6276.54</b>	<b>6,277</b>	<b>294</b>	<b>157</b>	<b>156</b>	<b>6,884</b>

**Table 10: Exploration Drilling for Q3 2018**

### Ndongo License Area

The Company has continued to concentrate its exploration focus this quarter on the Ndongo Licence which covers an area of 295km<sup>2</sup>. The area was recently expanded by the purchase of two exploration licence areas from Kinross Gold in August 2017 (Figure 3). Exploration has defined six prospects totalling 70km in strike length only 15-20km north of the Namdini Gold Project.

The Company considers the Licence area to be highly prospective for the discovery of economic gold mineralisation associated with the prolific Nangodi Shear Zone, a splay fault off the main regional-scale Bole-Bolgatanga Shear. Elsewhere, the Nangodi Shear Zone 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 3). In addition, there are numerous historic shallow artisanal workings along many parts of this shear zone.

### Ndongo East Prospect

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

Previously announced drilling intersected higher-grade gold mineralised structures concentrated in the northern portion of the shear zone over a 450m strike length on coincident gold-in-soil and geophysical targets (*refer to Cardinal's ASX/TSX announcement 16 July 2018 "Cardinal Makes New Gold Discovery at Ndongo"*).

Cardinal's most recent RC drilling (*refer to Cardinal's ASX/TSX announcement 29 August 2018 "Cardinal Extends Ndongo East Discovery Strike Length"*) along fence lines to test mineralisation further to the southwest along strike and at depth has proven encouraging. Further significant intercepts within the mineralised structures suggests the mineralisation continues. The furthest drill fence to the southwest intercepted a narrow zone of mineralisation of **2m grading 27.0 g/t Au** from 10m downhole in NDRC247 which indicates a strike potential of up to 1.2km of mineralised structures. Further infill drilling is planned for Q4 2018 to test this extended zone.

Intersections encountered as part of the RC drilling, has gold mineralisation developed at, or near, the diorite-granodiorite contacts, where competency differences create brittle fracturing which allows the ingress and precipitation of mineralising fluids. The mineralised horizons contain variable chlorite-silica-carbonate-sericite alteration with sulphides (mainly pyrite with very minor arsenopyrite).

The mineralised system is open along a northeast-southwest strike and at depth with multiple mineralised intersections.

Cardinal expects to recommence drilling after the wet season during October-November 2018 in order to test the strike and depth extents of the mineralised system.



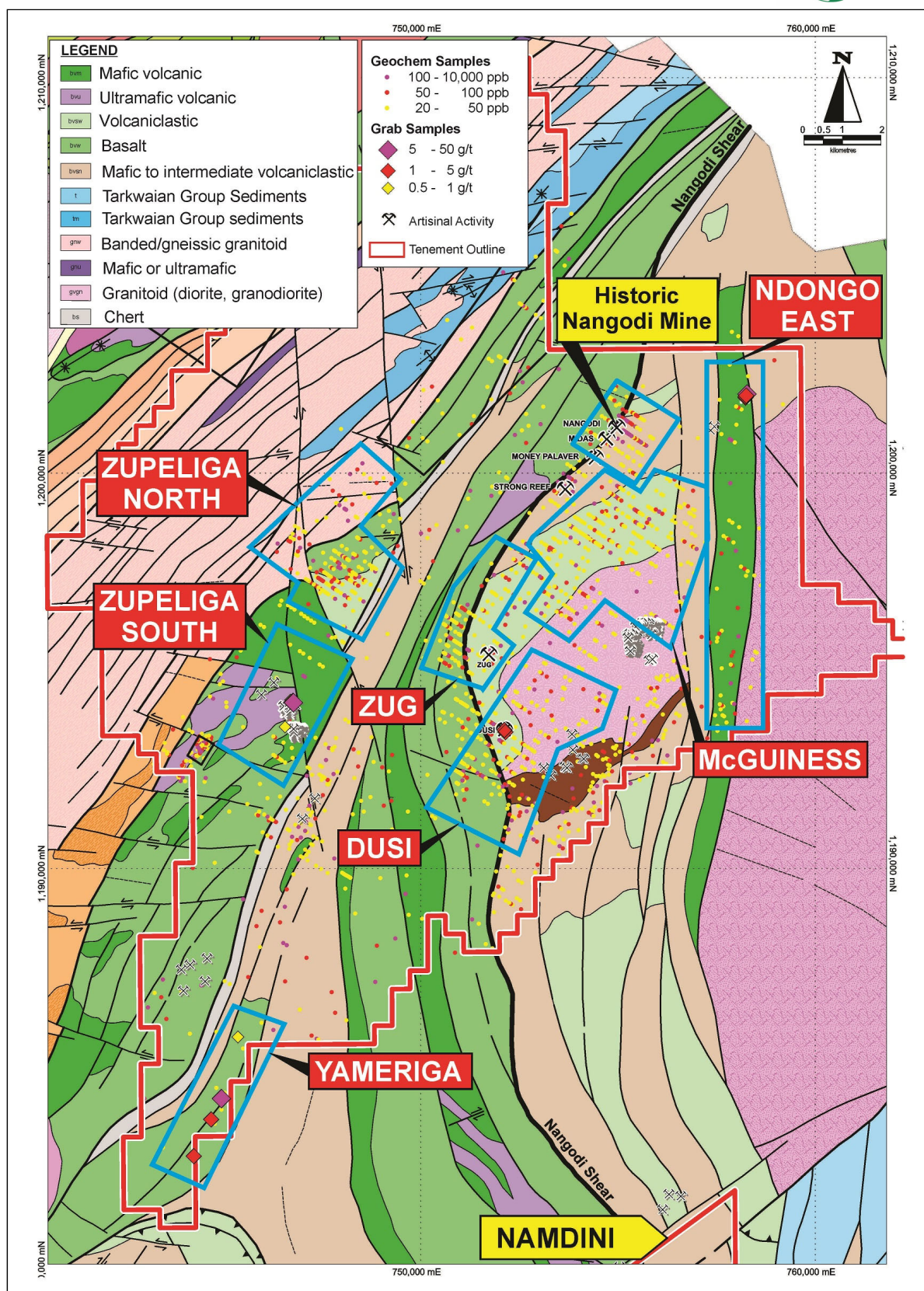


Figure 3: Ndongo Prospecting Licence showing local prospects

### Kungongo Tenement

The Kungongo Licence is located in northeast Ghana some 45km west of the Company's Namdini Gold Project. The Licence covers an area of 122 km<sup>2</sup> and is a renewable Exploration Licence (Figure 3).

Recent drilling focused mainly on the northern section of Kungongo to test rock chips gold anomalies, possible extensions of artisanal workings and ground magnetic anomalies. Lithologies encountered by drilling include metasediments and mafic volcanics. The initial RC/DD programme was planned on fences 200m apart with collars at 100m covering approximately 1.6km of strike length along the geophysical target. Assay results are pending and will be reported in Q4 2018

A ground magnetic survey was completed over 249 lines totalling 666.25-line kilometres on a line spacing of 50m covering the entire prospective Bole-Bolgatanga shear zone.

### SUBRANUM PROJECT

The Subranum Project covers an area of 69km<sup>2</sup> located in southwest Ghana. The license straddles the eastern margin of the Sefwi Gold Belt. There is 9km of prospective sheared contact between Birimian phyllites and greywackes to the east and mafic to intermediate volcanics and volcanoclastics to the west. Granitoid stocks of the Dixcove suite intrude this shear zone. The Sefwi Belt is highly prospective and is spatially related to major discoveries including the 7Moz Bibiani Gold Mine (approximately 70 km southwest), Newmont's Ahafo 23Moz Gold Mine (approximately 53 km west) and Kinross' Chirano 5Moz Gold Mine (approximately 110 km southwest).

The planned drill programme was to drill approximately 1,200m to assess the gold potential of this tenement after acquiring the exploration geophysical and RC drilling data from Newmont Corporation. The planned programme included drilling twin holes where possible to compare and confirm the Newmont results.

The near surface portions of each hole were drilled by HQ, totalling 487.60m, while the deeper portions were drilled by NQ, totalling 716.40m. The total DD amount drilled for this programme for the quarter was 1,204m.

The core was transported to Cardinal's Bolgatanga Exploration facilities. Longitudinally half core splitting and sampling was conducted, with the remaining half core stored at the Cardinal storage shed in Bolgatanga. Assay results are pending. Results when received will be assessed and reported in Q4 2018.

A summary of the drilling is in Table 11.

Prospect	Drill Method	No. Holes	Total (m)	No. Samples	Duplicates	Blanks	Stds	Total Samples
<b>Subranum</b>	DD Drilling	3	508.4	856	-	19	22	897
<b>Total</b>		<b>3</b>	<b>508.4</b>	<b>856</b>	<b>-</b>	<b>19</b>	<b>22</b>	<b>897*</b>

**Table 11: Subranum Exploration Drilling Q3 2018**

Note:

\*Includes samples from drilling completed in previous quarter

A soil auger programme planned for the remaining 3.8km strike length in the NE portion of the tenement to initially cover a ~400m width across the strike of the Bibiani Shear Zone was delayed due to extensive rain and will commence in Q4 2018, weather permitting.

## CORPORATE

During the quarter the Company was pleased to announce that it had received investment committee approval for an executed term sheet with Sprott Private Resource Lending (Collector), L.P. ("**Sprott**"). The term sheet provides Cardinal with a US\$25 million senior secured credit facility ("**Facility**") with a repayment period of 30 months. The Facility was subject to mutually satisfactory documentation and other customary conditions precedent, which closed on 22 August 2018.

A positive Preliminary Economic Assessment released in March this year clearly demonstrated Cardinal's flagship Namdini Gold Project in Ghana to be a low capital cost, high-margin development opportunity.

The US\$25 million Facility will provide working capital and funding to complete the Definitive Feasibility Studies for Namdini.

### Key terms of the Facility are as follows:

- Committed loan facility for US\$25 million to be funded on the closing date, being 22 August 2018
- 30-month repayment term
- Interest rate of LIBOR + 7.75%
- Early repayment flexibility
- Issue of 4,250,000 ordinary shares issued to Sprott, issued on 29 August 2018
- The Facility is secured against assets of Cardinal and its wholly owned subsidiary, Cardinal Namdini Mining Limited.

## SUBSEQUENT TO THE QUARTER END

The Company is pleased to announce the appointment of Mr Jon Grygorcewicz as Chief Financial Officer of Cardinal.

Mr Grygorcewicz brings 30 years financial management experience, gained in senior financial management positions on the Australian Securities Exchange (ASX) and Singapore Exchange Limited (SGX).

Jon has significant experience in implementing new debt facilities with Australian and international banks for developing gold and iron ore resource projects particularly to de-risk projects in the early start-up development phase.

In prior CFO roles he gained extensive financial and commercial experience within the heavy engineering services and manufacturing industries across operations spanning Australia and South East Asia.

In his position at Venture Minerals Limited he was an integral part of the development team in bringing the Riley Iron Ore Project to the brink of production and previously successfully transitioned Focus Minerals Limited's Coolgardie Gold Projects through the respective open pit and underground mining development phases to become, at the time, a substantial Australian gold producer.

Cardinal welcomes Jon to the team and confirms that Derrick Weyrauch has stepped down as CFO to focus on his other commitments.

**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 2018.

Tenement	Licence Status	Ref	Note	Interest Acquired During Quarter	Interest Divested During Quarter	Interest Held at End of Quarter
<b>Ghana</b>						
<b><i>Bolgatanga Project</i></b>						
Ndongo	Prospecting	PL9/22	-	-	-	100%
Kungongo	Reconnaissance	RL9/28	-	-	-	100%
Bongo	Reconnaissance	RL9/29	-	-	-	100%
Nangodi	Prospecting	PL9/13	-	-	-	100%
Yamergia	Prospecting	PL9/19	-	-	-	100%
<b><i>Namdini Project</i></b>						
Namdini	Mining Licence	LVB14619/09	-	-	-	100%
<b><i>Subranum Project</i></b>						
Subranum	Prospecting	PL/309	-	-	-	100%



**CAPITAL STRUCTURE**

As at 30 September 2018 the Company had the following capital structure;

Capital Structure	Listed	Unlisted	Total
Fully Paid Ordinary Shares (CDV)	373,323,580	-	373,323,580
Options Ex. \$0.15 on or before 30 September 2019	113,619,906	-	113,619,906
Options Ex. \$0.22 on or before 18 March 2020	-	6,000,000	6,000,000
Options Ex. \$0.75 on or before 21 December 2022	-	1,000,000	1,000,000
Milestone Options Ex. \$0.50 on or before 12 April 2022	-	18,500,000	18,500,000
Milestone Options Ex. \$0.825 on or before 21 December 2022	-	5,758,000	5,758,000
Milestone Options Ex. \$0.965 on or before 21 December 2022	-	4,036,200	4,036,200
- Class C Performance Shares	-	60	60

**Cash Balance**

The Company's cash balance at 30 September 2018 was approximately AU\$35.7 million.

For further information contact:

Archie Koimtsidis

CEO / MD

**Cardinal Resources Limited**

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### Competent / Qualified Person Statement

The scientific and technical information in this Quarterly report that relates to 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, Mineral Resources or Ore Reserves 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".

The information in this report that relates to Namdini Mineral Resources is based on information compiled and reviewed by Mr Nicholas Johnson, a Competent Person who is a Member of the Australian Institute of Geoscientists and a full-time employee of MPR Geological Consultants Pty Ltd. Mr Johnson has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the JORC Code 2012 and is a qualified person for the purposes of NI43-101. Mr Johnson has no economic, financial or pecuniary interest in the company and consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

The information in this press release that relates to Namdini Ore Reserves and mining studies is based on information compiled and reviewed by Mr Glenn Turnbull, a Competent Person who is a Chartered Engineer and Member of the Australasian Institute of Mining and Metallurgy and a full-time employee of Golder. Mr Turnbull has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the JORC Code 2012 and is a qualified person for the purposes of NI43-101. Mr Turnbull has no economic, financial or pecuniary interest in the company and consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

### JORC 2012

This report contains information extracted from the following reports which are available for viewing on the Company's website [www.cardinalresources.com.au](http://www.cardinalresources.com.au) :

- 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.

#### **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 PEA 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.

## 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**

56 147 325 620

**Quarter ended ("current quarter")**

30 September 2018

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (3 months) \$A'000
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers	-	-
1.2 Payments for		
(a) exploration & evaluation	(3,685)	(3,685)
(b) development	-	-
(c) production	-	-
(d) staff costs	(382)	(382)
(e) administration and corporate costs	(1,047)	(1,047)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	18	18
1.5 Interest and other costs of finance paid	(188)	(188)
1.6 Income taxes paid	-	-
1.7 Research and development refunds	-	-
1.8 Other (provide details if material) – VAT/GST/Foreign Exchange	(658)	(658)
<b>1.9 Net cash from / (used in) operating activities</b>	<b>(5,942)</b>	<b>(5,942)</b>
<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire:		
(a) property, plant and equipment	(36)	(36)
(b) tenements (see item 10)	-	-

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 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	<b>Net cash from / (used in) investing activities</b>	<b>(36)</b>	<b>(36)</b>

<b>3.</b>	<b>Cash flows from financing activities</b>		
3.1	Proceeds from issues of shares	-	-
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	76	76
3.4	Transaction costs related to issues of shares, convertible notes or options	-	-
3.5	Proceeds from credit facility, net of costs	33,653	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	<b>Net cash from / (used in) financing activities</b>	<b>33,729</b>	<b>33,729</b>

<b>4.</b>	<b>Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1	Cash and cash equivalents at beginning of period	7,294	7,294
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(5,942)	(5,942)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(36)	(36)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	33,729	33,729

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

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
4.5	Effect of movement in exchange rates on cash held	715	715
4.6	Cash and cash equivalents at end of period	35,760	35,760

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	1,845	393
5.2	Call deposits	33,915	6,902
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)	35,760	7,295

## 6. Payments to directors of the entity and their associates

6.1 Aggregate amount of payments to these parties included in item 1.2

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

Current quarter  
\$A'000

323

-

## 7. Payments to related entities of the entity and their associates

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

Current quarter  
\$A'000

-

-



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

8.	<b>Financing facilities available</b> <i>Add notes as necessary for an understanding of the position</i>	<b>Total facility amount at quarter end</b>	<b>Amount drawn at quarter end</b>
		<b>\$A'000</b>	<b>\$A'000</b>
8.1	Loan facilities	\$34,793	\$34,793
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.	<b>Estimated cash outflows for next quarter</b>	<b>\$A'000</b>
9.1	Exploration and evaluation	1,500
9.2	Development	-
9.3	Production	-
9.4	Staff costs	382
9.5	Administration and corporate costs	1,003
9.6	Other (provide details if material)	-
9.7	<b>Total estimated cash outflows</b>	<b>2,885</b>

10.	<b>Changes in tenements (items 2.1(b) and 2.2(b) above)</b>	<b>Tenement reference and location</b>	<b>Nature of interest</b>	<b>Interest at beginning of quarter</b>	<b>Interest at end of quarter</b>
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

**Compliance statement**

- 1 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  
Company Secretary

Date: 31 October 2018

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.