

Addendum to Namdini Ore Reserve Press Release

18.04.2019 | [GlobeNewswire](#)

TORONTO, April 18, 2019 - [Cardinal Resources Ltd.](#) (ASX/TSX: CDV) is pleased to provide further updates in the form of an addendum to the Ore Reserve press release on the Namdini Gold Project in Ghana (ASX/TSX press release dated 3 April 2019).

The Namdini Gold Project Feasibility Study is progressing and is expected to be delivered this quarter, one quarter ahead of schedule (ASX/TSX press release dated 10 April 2019).

The Company has lodged this addendum to the announcement on the 3 April 2019, attached herewith, which provides the relevant modifying factors and updates thereof on each of the criteria under ASX listing rule LR 5.9.1 supporting the 5.1 Moz Ore Reserve Estimate.

The Company herewith also provides a PFS update report to that from 18 September 2018. The Company confirms that it is not aware of any new information or data that materially affects the information included in its press release 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.

This addendum demonstrates the assumptions made since the ASX/TSX Cardinal Namdini Pre-Feasibility Study press release dated 18 September 2018 which underpin the updated Ore Reserve press release dated 3 April 2019.

The 5.1 Moz Ore Reserve figures are presented in table form below:

Ore Reserve Category	Tonnes Grade Contained Gold		
	(Mt)	(g/t Au)	(Moz)
Proved	7.4	1.31	0.4
Probable	131.2	1.12	4.7
Proved and Probable	138.6	1.13	5.1

Table 1: Summary of Namdini's Proved and Probable Ore Reserve estimate at 0.5 g/t Au cut off.

The financial modelling of the project is current as per the PFS report dated 18 September 2018 with the Base Case selected option being 9.5 Mtpa. For further details in relation to the economic results please see press release dated 18 September 2018.

Of the three throughput options being the 4.5 Mtpa, 7.0 Mtpa and 9.5 Mtpa, the 9.5 Mtpa Business Case was selected as the preferred option to move into the Feasibility Study (FS) phase, based upon this option being the optimum NPV. This is presented in section 16.3 of the Addendum and for further details in relation to this evaluation are provided in the ASX/TSX announcement dated 18 September 2018.

The updated PFS economic evaluation, for the 9.5 Mtpa option, has not changed significantly and the change is not material and therefore the PFS economic figures are still relevant and within the accuracy (+30 % / -20 %) of the 9.5 Mtpa option of the PFS dated 18 September 2019.

UPDATED PRE-FEASIBILITY STUDY PARAMETERS – CAUTIONARY STATEMENT

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 updated PFS report referred to in this announcement is based upon a Proved and Probable Ore Reserve derived from Measured and Indicated Mineral Resources. No Inferred Mineral Resources have been included in the estimation of Ore Reserves. The Company advises that the Proved and Probable Ore Reserve provides 100% of the total tonnage and 100% of the total gold metal underpinning the updated Ore Reserve. No Inferred Mineral Resource material is included in the Life of Mine plan.

Unless otherwise stated, all cost estimates are in US dollars and are not subject to inflation/escalation factors and all years are calendar years. The updated PFS has been prepared to an overall capital expenditure (CAPEX) level of accuracy of approximately -30% to +20%. 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).

The Company has concluded that it has a reasonable basis for providing forward looking statements included in this announcement. The detailed reasons for this conclusion are outlined throughout this announcement and in Forward Looking and Cautionary Statements.

RESERVE UPDATE INPUTS AND MODIFYING FACTORS – SUMMARY (DETAILS ARE TABLED ON NEXT PAGE)

The Namdini Gold Project Reserve Update (ASX/TSX release dated 3 April 2019) is based upon the following key input parameters:

- A revised Mineral Resource model, compiled by MPR Geological Consultants using all the current drillhole data. This is as issued in the 3 April 2019 ASX/TSX release.
- A Proved and 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 haulage costs based on in-country contractor miner supplier inputs and owner mining cost models, processing inputs and geotechnical pit design considerations. These modifying factors are as of 3 April 2019.
- The cut-off grade parameters have been updated; however, the cut-off grade estimate remains the same as of the ASX/TSX announcement 18 September 2018 Cardinal Namdini Pre-Feasibility Study.
- Geotechnical inputs and parameters for Life Of Mine pit design from Golder (Perth), as of the ASX/TSX announcement 18 September 2018 Cardinal Namdini Pre-Feasibility Study.
- Process engineering design, capital and operating costs by Lycopodium Limited (Perth). This remains as of the PFS 18 September 2018.
- Metallurgical recovery inputs based on testwork by ALS Global (Perth) and recent testwork results from Maelgwyn Mineral Services Africa (Johannesburg, South Africa), interpreted by Independent Metallurgical Operations (IMO, Perth).
- Process infrastructure design including and not limited to, waste, residue, tailings storage and water management design by Knight Piésold Consulting (Perth). (ASX/TSX announcement 18 Sept 2018 Cardinal Namdini Pre-Feasibility Study).
- Other cost inputs e.g. supporting infrastructure, HV power, administration and accommodation by owner's team and external consultants' inputs. (ASX/TSX announcement 18 September 2018 Cardinal Namdini Pre-Feasibility Study).
- The status of the social and environmental approvals, mining tenements, other government factors and other infrastructure requirements for selected the mining method remains the same as per the ASX/TSX announcement 18 September 2018 Cardinal Namdini Pre-Feasibility Study.
- For the updated PFS the economic evaluation, for the 9.5 Mtpa option, has not changed significantly and therefore the PFS economic figures are still relevant and within the accuracy (+30 % / -20 %) of the 9.5 Mtpa option of the PFS dated 18 September 2019.

RESERVE UPDATE INPUTS AND MODIFYING FACTORS (DETAIL)

The ASX/TSX 3 April 2018 Release does not represent a material change from the ASX/TSX 18 September 2018 Release, however, the following information is supplied in accordance with ASX Listing Rule 5.91:

Comparison of Modified Assumptions

ASX/TSX 18 September 2018
Release

ASX/TSX
Release

Updated Assumptions and Outcomes

The Company is not aware of any material changes to the assumptions and outcome from the ASX/TSX 18 September 2018 Release. This document summarises the updated information from the ASX/TSX 18 September 2018 Release.

Costs were provided by Lycopodium to a PFS level. Capital and operating costs were estimated for three process plant ore feed throughputs: 4.5 Mtpa, 7.0 Mtpa and 9.5 Mtpa.

Costs were
proposed

Operating costs were compiled from quotations, database and a variety of sources and compared against existing and planned operations elsewhere in Ghana.

Operating
existing

Mining costs were provided by Golder based on fully quoted submissions from the two largest in country mining contractors and supported by similar mining operations in Africa. The estimated base mining cost used an incremental cost with depth to account for increased haulage costs. The depth of mining increases in line with standard mining cost principles.

Mining costs
database
the two largest
estimated
costs.

All costs were determined on a US dollar (US\$) basis.

All costs

An allowance for 5% royalties was used in the Optimisations and financial modelling associated with the LOM planning assessment.

An allowance
LOM planning

Gold will be the single product commodity from the Namdini Gold Project with the gold product being exported as doré.

Gold will
exported

Gold is a readily traded commodity and no specific market study has been carried out. Advice regarding the forward-looking gold price was provided by Cardinal Resources.

Gold is a
forward-looking

No projected or oversupply of gold is envisaged which could affect the product market pricing.

No projected

The long-term price of gold has been assumed to be US\$1,250 for the financial model evaluation metrics

The long-term

The gold will be sold as doré bars.

The gold

The criteria used for classification, including classification of the mineral resources on which the ore reserves are based

Mineral Resources were classified on the basis of estimation search passes. A progressively less stringent three pass search strategy produced the three categories of confidence. The highest confident estimate uses a search ellipse of approximately the same dimension of the dominant drill spacing and a significant number of resource composites selected from within an octant constraint. The search radii are expanded and sample criteria relaxed for the second and third categories.

Resources
three categories

The current drill hole spacing does not support Measured Mineral Resources, only Indicated (search pass 1) and Inferred (combined search pass 2 and 3) is reported.

The classification

The resource classification accounts for all relevant factors and reflect the competent person's views of the deposit.

classified
as Measured
category
agreement

There is an acceptable degree of confidence for tonnes above the cut-off grade due to the pervasive gold mineralization exceeding the cut-off grade. The average grade of the deposit above the cut-off grade is sensitive to the treatment and volumes applied to high grades. The majority of the resources require additional drilling to facilitate conversion to Measured category and the current classification designation support this.

Only Probable Ore Reserves are declared for the Namdini Gold Project. No Measured Resource is present in the current Mineral Resource model.

Probable
Resource
Reserves

Indicated Mineral Resource material was converted to Probable Ore Reserves where that material was within the final pit design and was scheduled for processing after application of the Modifying Factors.

The Ore Reserves have been classified as Probable by conversion of Indicated Resource material above the 0.5 g/t Au cut-off grade within the final pit design.

The Ore Reserve was estimated from the Mineral Resource after consideration of the level of confidence in the Mineral Resource and taking account of 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 Reserves since no Measured Mineral Resource has yet been defined.

The key to the accuracy of the Ore Reserve is the underpinning Mineral Resource that is considered to be of sufficient confidence to allow mine planning studies to be completed.

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. Material Modifying Factors (mining, processing, infrastructure, environmental, legal, social and commercial) were considered during the Ore Reserve estimation process.

The key factors that are likely to affect the accuracy and confidence in the Ore Reserves are:

- Changes in gold prices and sales agreements
- Accuracy of the underlying Resource Block Models
- Changes in metallurgical recovery

Mining loss and dilution

The mining method selected and other mining assumptions, including mining recovery and mining dilution factors

The Namdini Gold Project will be mined by medium scale conventional open pit mining equipment. The mining process will include drill and blast, and conventional load and haul operations. There is a minimal amount of free-dig material with the majority of material requiring drilling and blasting.

Mining will be carried out using staged cutbacks with four identified Stages being incorporated into the LOM final pit. Oxide ore will be stockpiled temporarily and treated separately within the process plant as a batch process. Waste rock will be dumped separately with the waste rock piles on the western side of the pit.

The pit slopes have been assessed from a detailed geotechnical investigation by Golder with the Oxide (upper material) requiring an estimated overall slope angle of 40°, whilst an overall slope angle of 40° was allowed for in Fresh rock.

Grade control drilling will precede ore identification and ore mark-out on a bench basis.

The mining model has assumed that sufficient account for estimated ore loss and dilution was incorporated into the Mineral Resource model through the resource estimation (MIK with post-processing of variance adjustment and change of support) technique. Moderate bulk mining (minimal selectivity) was assumed with 400~600 t excavators feeding 100~150 t rigid body haul trucks.

A minimum mining width of 60 m was assumed.

Inferred Mineral Resources have been considered as waste material. There is minimal Inferred Resource material within the final pit design.

Mining infrastructure requirements will be provided by the selected mining contractor with the mining performed on an outsourced basis.

The processing method selected and other processing assumptions, including the recovery factors applied and allowa

Metallurgical process recoveries have been defined on various samples for Oxide and Fresh ore. Metallurgical testwork was carried out by ALS Laboratories Perth, Australia. An average estimated 90% for the oxide ore and 84% recovery for the Fresh ore was applied in the LOM plan and the pit optimisation process. Testwork is ongoing.

The process plant will be a conventional crush, grind, flotation, regrind (of flotation concentrate), Carbon-In-Leach with elution circuit, electrowinning and gold smelting to recover the gold from the loaded carbon to produce doré.

The regrind size was selected as a P90 of 6µm.

No deleterious elements have been identified in the testwork that could affect the saleability or price of the gold doré produced.

Testwork carried out to date indicates that the Namdini Gold Project can use a standard gold recovery process plant design with no innovative technology required.

Namdini will produce a readily saleable gold doré which will be exported for refining.

The Basis of the Cut-Off Grade(s) or Quality Parameters Applied

A marginal cut-off grade (COG) was estimated for gold using a gross long-term gold price of US\$1300/oz. Input processing costs of \$14.49/t plus \$1.50/t stockpile reclaim using an estimated 86% metallurgical recovery. A marginal COG was estimated as: process cost / (net gold price * process recovery) i.e. $COG = (\$14.49 + \$1.50) / (\$39.63 * 86\%)$ giving 0.5 g/t (to one significant figure)

Using this marginal COG, the proportion of ore, and the gold grade above the COG, were defined in the mining model and the parcelled (ore + waste) blocks were exported for open pit optimisation.

Estimation Methodology

Resource model is Multiple Indicated Kriging (MIK)

Updated modifying factors, including status of environmental approvals, mining tenements and approvals, other government requirements, and market.

The Mining Licence covering Cardinal's Namdini Project over an area of approximately 19.54 sq. Km is located in the Northeast region of Ghana.

The previous holder of the Mining Licence, Savannah Mining Ghana Limited (Savanah) completed an initial Environmental Impact Statement (EIS) and lodged the EIS with the Environmental Protection Agency of Ghana.

The application by Savannah for a Large-Scale Mining Licence over an area of approximately 19.54 Sq. Km in the Upper East Region of Ghana covering Cardinal's Namdini Project has been granted by the Minister of Lands and Natural Resources of Ghana.

Savannah applied for the assignment of this Large-Scale Mining Licence to Cardinal Namdini Mining Limited (Namdini), a wholly owned Subsidiary of Cardinal. The assignment has been granted by the Minister of Lands and Natural Resources of Ghana.

All tenements are current and in good standing. The Mining Lease for Namdini was granted for an initial 15 years which is renewable.

An initial environmental study was completed by NEMAS. This study was commenced in early 2017 with the PFS report component expected in September 2018.

Further detailed environmental studies are continuing.

A Pre-feasibility level environmental and social study is currently being carried out by NEMAS including active engagement of local and state regulatory bodies.

ABOUT CARDINAL

[Cardinal Resources Ltd.](#) (ASX/TSX: CDV) is a West African gold-focused exploration and

development Company that holds interests in tenements within Ghana, West Africa.

The Company is focused on the development of the Namdini Project with a gold Ore Reserve of 5.1Moz (0.4 Moz Proved and 4.7 Moz Probable) 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 3 April 2019. All material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed.

For further information contact:

Archie Koimtsidis

CEO / MD

[Cardinal Resources Ltd.](#)

P: +61 8 6558 0573

Andrew Rowell

Cannings Purple

E: arowell@canningspurple.com.au

P: +61 400 466 226

Alec Rowlands

IR / Corp Dev

[Cardinal Resources Ltd.](#)

P: +1 647 256 1922

Peta Baldwin

Cannings Purple

E: pbaldwin@canningspurple.com.au

P: +61 455 081 008

Competent / Qualified Person Statement

All production targets for the Namdini Gold Mine referred to in this report are underpinned by estimated Mineral Resources and Ore Reserves which were prepared by competent persons and qualified persons in accordance with the requirements of the JORC Code and National Instrument 43-101- Standards of Disclosure for Mineral Projects ("NI43-101"), respectively.

Scientific and technical information contained in this press release has been reviewed and approved by Mr. Daryl Evans, Independent Metallurgical Operations Pty Ltd, 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). Mr. Evans is an independent consultant appointed by Cardinal. Mr. Evans consents 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.

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 Associates. 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.

The information in this press release that relates to Namdini Mineral Resources is based on information compiled and reviewed by Mr Nicolas 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 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 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 scientific and technical information contained in this press release is based on information compiled and reviewed by Mr Richard Bray, a Competent Person who is a Registered Professional Geologist with the

Australian Institute of Geoscientists and a full-time employee of [Cardinal Resources Ltd.](#) Mr Bray 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. Bray is a full-time employee of Cardinal and holds equity securities in the Company. Mr. Bray has consented to the inclusion of the matters in this report based on the 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 :

- o 10 April 2019 Feasibility Study & Project Finance Update
- o 03 April 2019 Cardinal's Namdini Ore Reserve Now 5.1Moz
- o 26 October 2018 Technical Report on Namdini Gold Project Filed on Sedar
- o 18 September 2018 Cardinal Namdini Pre-Feasibility Study 4.76Moz Ore Reserve

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 confirms that it is not aware of any new information or data that materially affects the information included in its announcement of the Ore Reserve of 3 April 2019. All material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed.

Disclaimer

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

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

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

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

Forward-looking statements

Certain statements contained in this press release, including information as to the future financial or

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

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

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

Dieser Artikel stammt von [Rohstoff-Welt.de](https://www.rohstoff-welt.de)

Die URL für diesen Artikel lautet:

<https://www.rohstoff-welt.de/news/324082--Addendum-to-Namdini-Ore-Reserve-Press-Release.html>

Für den Inhalt des Beitrages ist allein der Autor verantwortlich bzw. die aufgeführte Quelle. Bild- oder Filmrechte liegen beim Autor/Quelle bzw. bei der vom ihm benannten Quelle. Bei Übersetzungen können Fehler nicht ausgeschlossen werden. Der vertretene Standpunkt eines Autors spiegelt generell nicht die Meinung des Webseiten-Betreibers wieder. Mittels der Veröffentlichung will dieser lediglich ein pluralistisches Meinungsbild darstellen. Direkte oder indirekte Aussagen in einem Beitrag stellen keinerlei Aufforderung zum Kauf-/Verkauf von Wertpapieren dar. Wir wehren uns gegen jede Form von Hass, Diskriminierung und Verletzung der Menschenwürde. Beachten Sie bitte auch unsere [AGB/Disclaimer!](#)

Die Reproduktion, Modifikation oder Verwendung der Inhalte ganz oder teilweise ohne schriftliche Genehmigung ist untersagt!
Alle Angaben ohne Gewähr! Copyright © by Rohstoff-Welt.de -1999-2026. Es gelten unsere [AGB](#) und [Datenschutzrichtlinien](#).