

GHANA

5.1 Moz

ORE RESERVE\*  
Developer



2019 Thayer Lindsley Award

ASX - TSX: CDV

Investor Presentation - March 2020

\* 138.6 Mt @ 1.13 g/t Au; 0.5 g/t Au cut-off

# Board & Management



**Kevin Tomlinson**  
Chairman  
*Banker*

**Former**

- NED - Centamin plc, Orbis Gold, Chairman - Medusa

**Current**

- Chairman - Bellevue Gold



**Archie Koimtsidis**  
MD / CEO  
*Project Developer*

**Former**

- PMI Gold – Ghana (now Asanko Gold)
  - Deputy Country Manager
- **Ghanaian resident**



**Malik Easah**  
Executive Director  
*Government Liaison*

**Former**

- PMI Gold - Ghana (now Asanko Gold)
  - Public Relations Officer
- **Ghanaian citizen**



**Michele Muscillo**  
NED  
*Corporate Lawyer*

**Former**

- NED - Orbis Gold

**Current**

- NED - Aeris Resources
- NED - Xanadu Mines



**Trevor Schultz**  
NED  
*Mine Construction, Development & Operations*

**Former**

- AngloGold Ashanti – Ghana - COO
- Centamin plc – Egypt – Exec Director
- BHP – Exec Manager
- Rio Tinto – Exec Manager



**Dr Kenneth Thomas**  
NED  
*Project Implementation*

**Former**

- Barrick Gold Corp – Senior VP

**Current**

- NED - Continental Gold Corp
- NED – DRA Global



**Dave Anthony**  
COO  
*Mine Construction Development & Operations*

**Former**

- Barrick Gold Corp - Africa - COO
- Kinross – Project Director
- +30 Years Experience
  - 12 process plant start ups



**Jon Grygorcewicz**  
CFO

**Former**

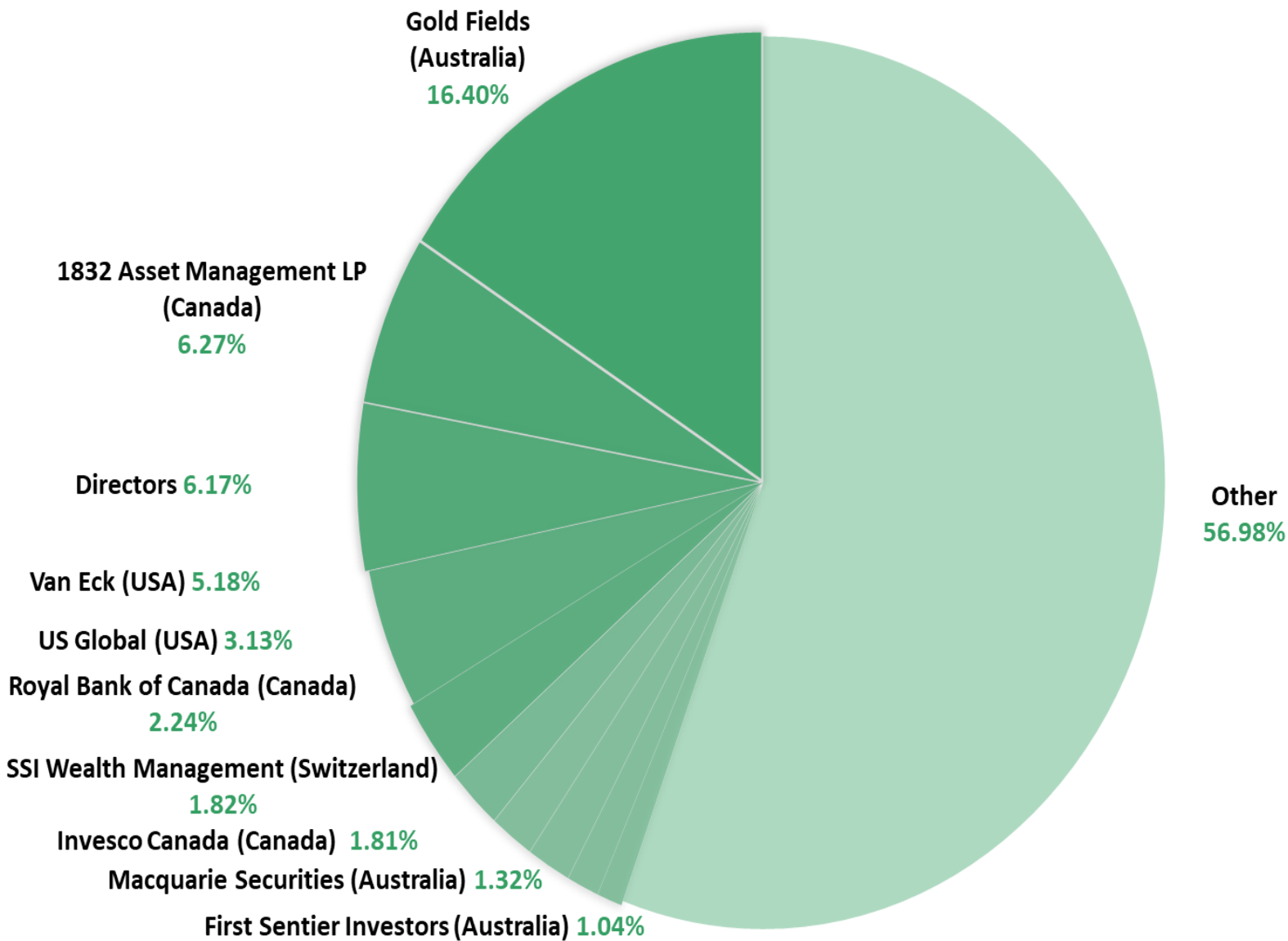
- Focus Minerals – Gold Producer
  - CFO
- Venture Minerals – Iron Ore Dev.
  - CFO

# Corporate Overview

|                                  |            |
|----------------------------------|------------|
| ASX / TSX Code                   | CDV        |
| Current Share Price <sup>1</sup> | A\$ 0.37   |
| Shares on Issue <sup>2,3</sup>   | 494 M      |
| Market Capitalisation            | A\$ 182 M  |
| Cash at Bank <sup>4</sup>        | A\$ 20.4 M |

1. As at 27 February 2020
2. 60 Class C Performance shares on issue. If converted, will total 6 million ordinary shares if certain milestones are achieved. Details of conversion milestones are provided in Cardinal's Annual Report
3. 46,392,102 unlisted options on issue with various expiry dates and exercise prices
4. Cash as at 31 December 2019: Details of loan facility are provided in announcement dated 23 Aug 2018.

|                               |                  |
|-------------------------------|------------------|
| Argonaut                      | (Australia)      |
| Beacon Securities             | (Canada)         |
| BMO Capital Markets           | (Canada)         |
| Clarus Securities             | (Canada)         |
| Cormark Securities            | (Canada)         |
| Macquarie Research            | (Canada)         |
| Martin Place Securities (MPS) | (Australia)      |
| Hartleys                      | (Australia)      |
| RFC Ambrian                   | (United Kingdom) |



# Namdini Gold Deposit

## ■ Namdini Discovery Timelines

- Drill Hole # 1 – 2014<sup>1</sup>
- Discovery Declared - 2015
- Maiden Resource – 2016<sup>2</sup>
- PEA – 2018<sup>3</sup>
- PFS – 2018<sup>4</sup>, 4.76Moz\* Ore Reserve
- FS – 2019<sup>5</sup>, 5.1Moz\*\* Ore Reserve
- Gold Production - 2022<sup>5</sup>

## ■ Well-Established Local Infrastructure

- 30km – National HV hydro grid power
- 25km – Sealed national highway
- 7km – Continuous water supply – White Volta River

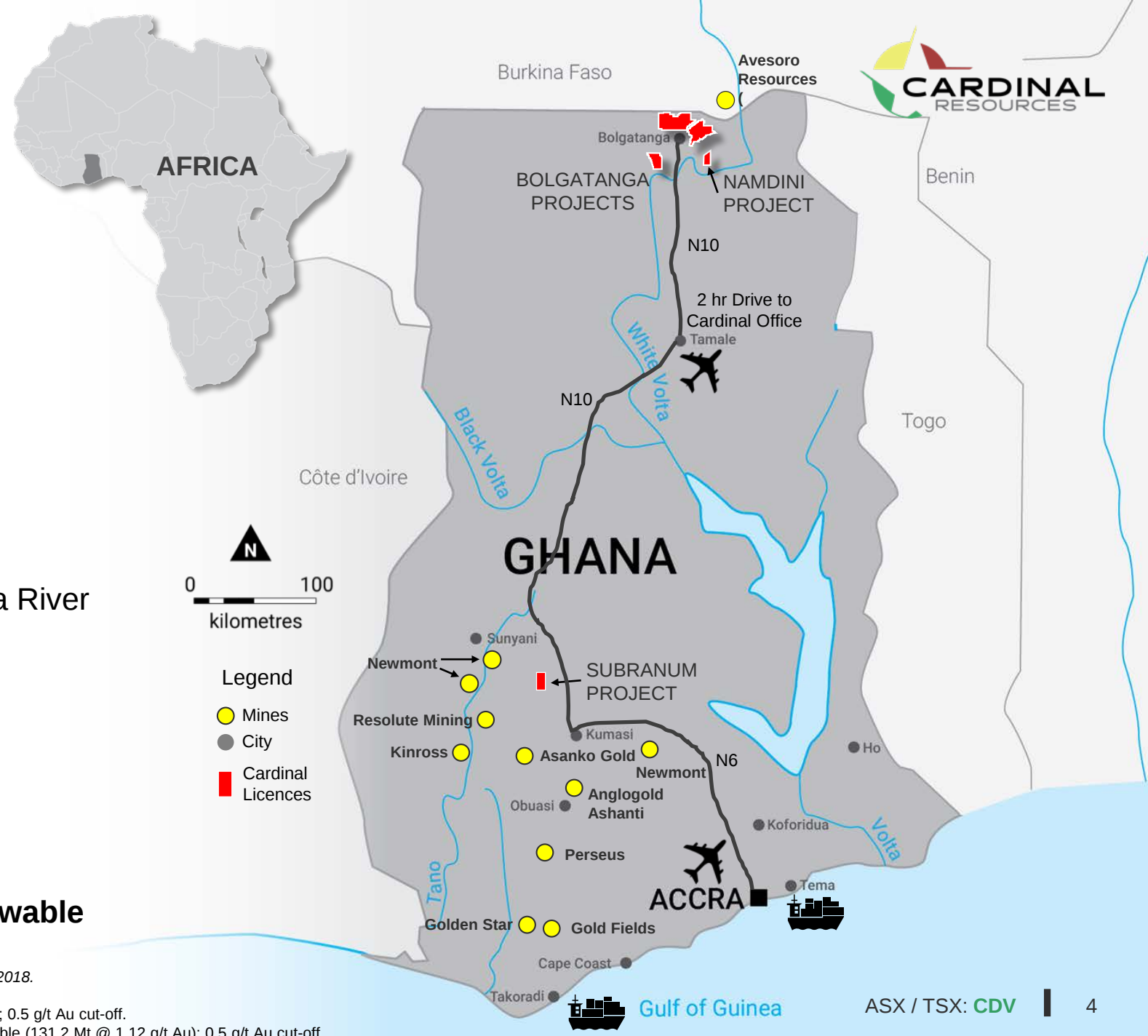
## ■ Excellent Community Relationships

- Facilitates rapid development objective

## ■ Open Savannah Grassland

- Low population density

## ■ Mining License Granted for 15 years - renewable



1. Press release 28 July 2014. 2. Press release 7 November 2016. 3. Press release 5 February 2018.

4. Press release 18 September 2018. 5. Press release 28 October 2019.

\*129.6Mt @ 1.14 g/t Au at 0.5 g/t cut-off, inclusive of 4.76 Moz Probable (126.9 Mt @ 1.14 g/t Au); 0.5 g/t Au cut-off.

\*\*138.6Mt @ 1.13 g/t cut-off, inclusive of 0.4Moz Proved (7.4Mt @ 1.31 g/t Au) and 4.7Moz Probable (131.2 Mt @ 1.12 g/t Au); 0.5 g/t Au cut-off

# FS Cross Section – Grade Distribution

**118,864m**

Drilled since  
first discovery hole in 2015

**64,423m**

HQ size Diamond Drilling

**41,170m**

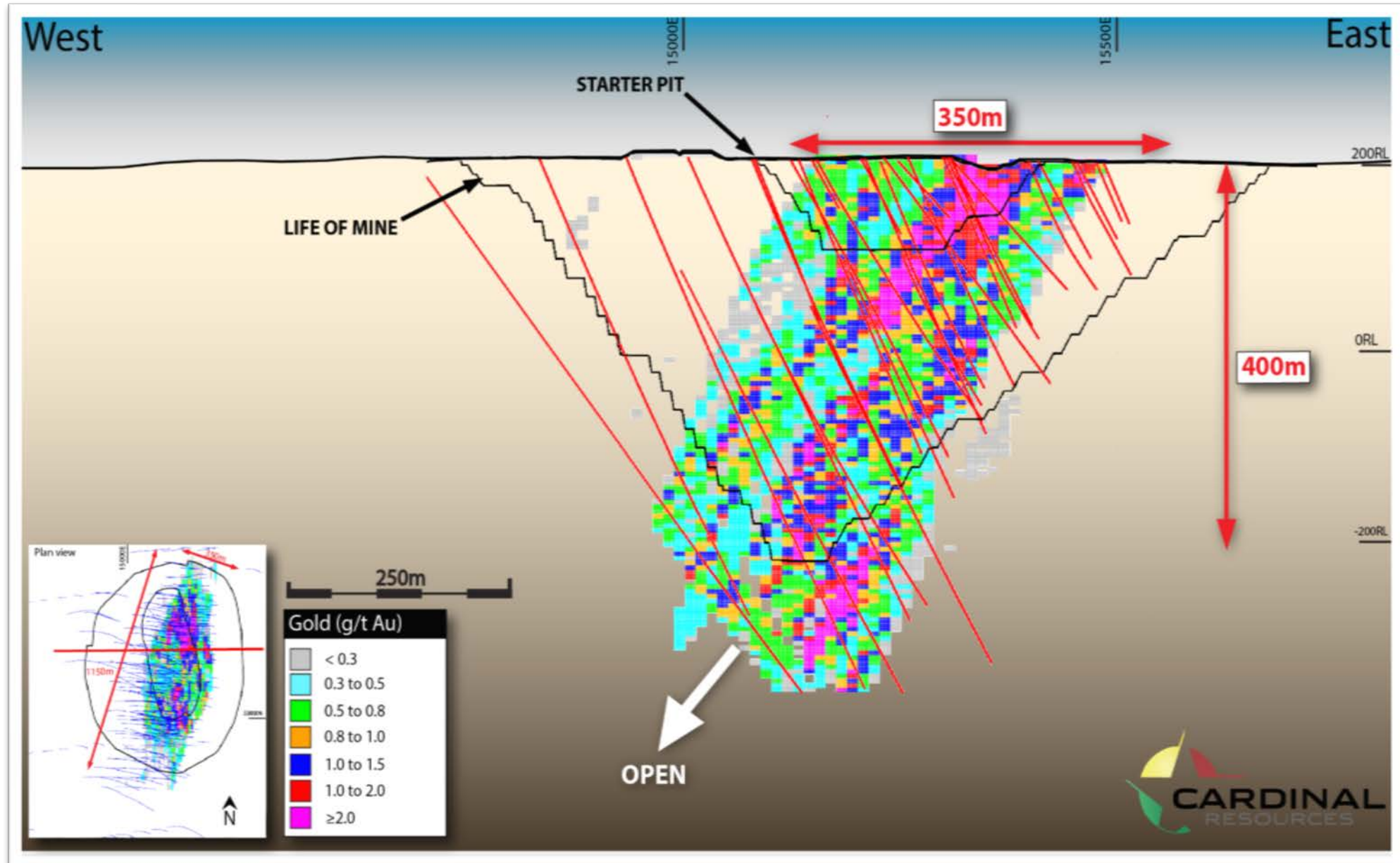
5.5" size RC Drilling

**13,271m**

Drilled for Grade Control

**350m**

Average width of mineralisation



# FS Long Section – Grade Distribution

## Starter Pit

First 27 months  
Production ~1.1 Moz

## Starter Pit Metrics

28.2Mt @ 1.41 g/t Au  
Strip ratio - 0.9 : 1

## Life of Mine Pit

Strip ratio - 1.9 : 1

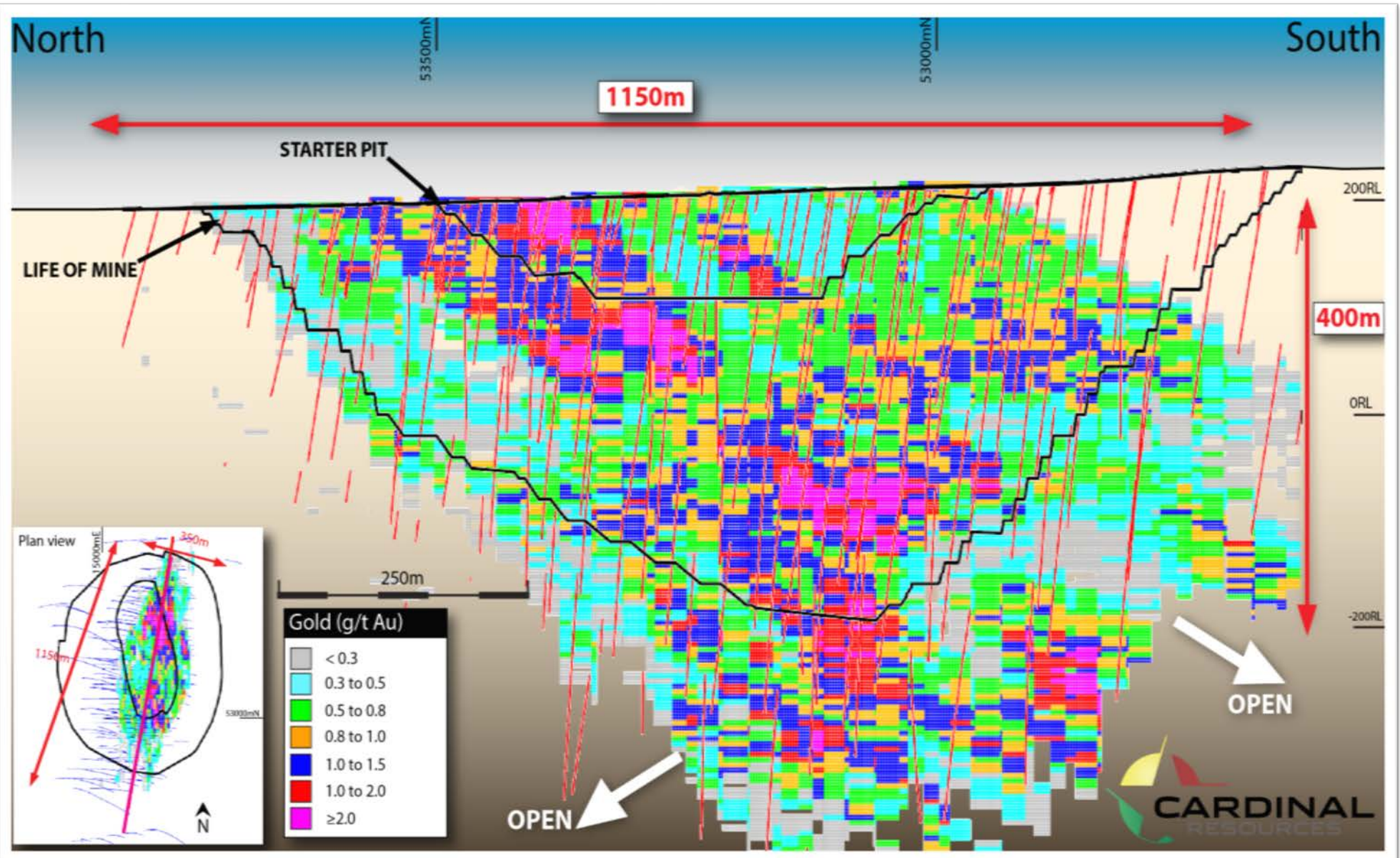
## LOM Ore Reserve\*

**5.1 Moz**

138.6Mt @ 1.13 g/t Au;  
0.5 g/t cut off

## Capex Payback

21 months



\*Ore Reserves as of Oct 2019 FS

# Mineral Resource Estimate

## Measured and Indicated Mineral Resource

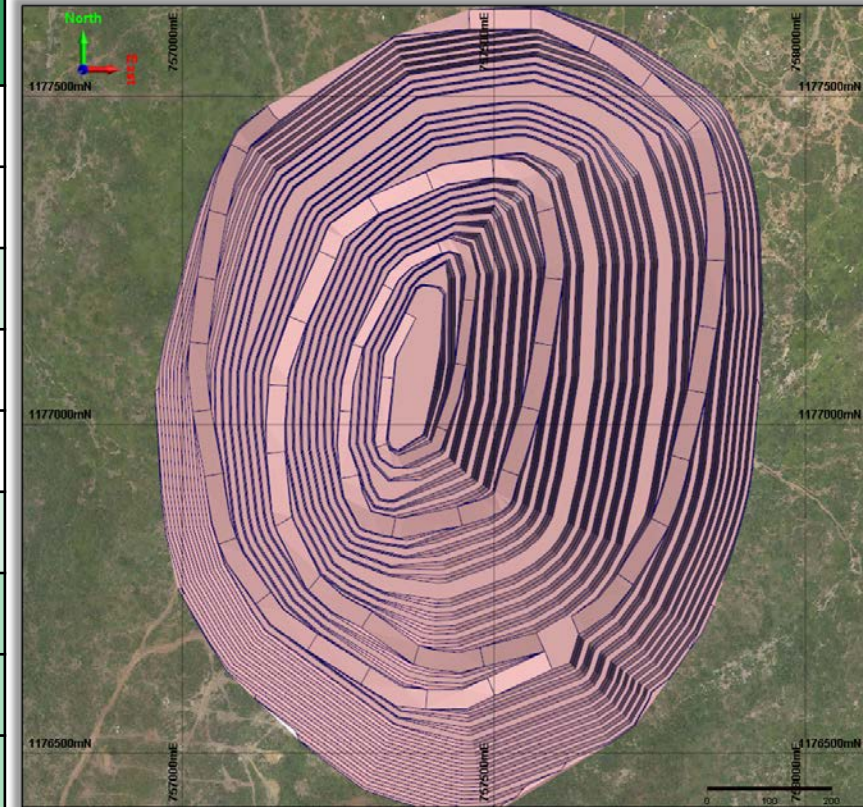
| Mineral Resource category     | Type         | Tonnes (Mt) | Gold grade (g/t Au) | Contained gold (Moz) |
|-------------------------------|--------------|-------------|---------------------|----------------------|
| Measured                      | Oxide        | 1.1         | 1.23                |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

## Inferred Mineral Resource

| Mineral Resource category | Type         | 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                 |
| <b>Inferred Resource</b>  | <b>Total</b> | <b>12</b>   | <b>1.2</b>          | <b>0.46</b>          |

# Ore Reserve Estimate

Feasibility Life Of Mine Pit Design

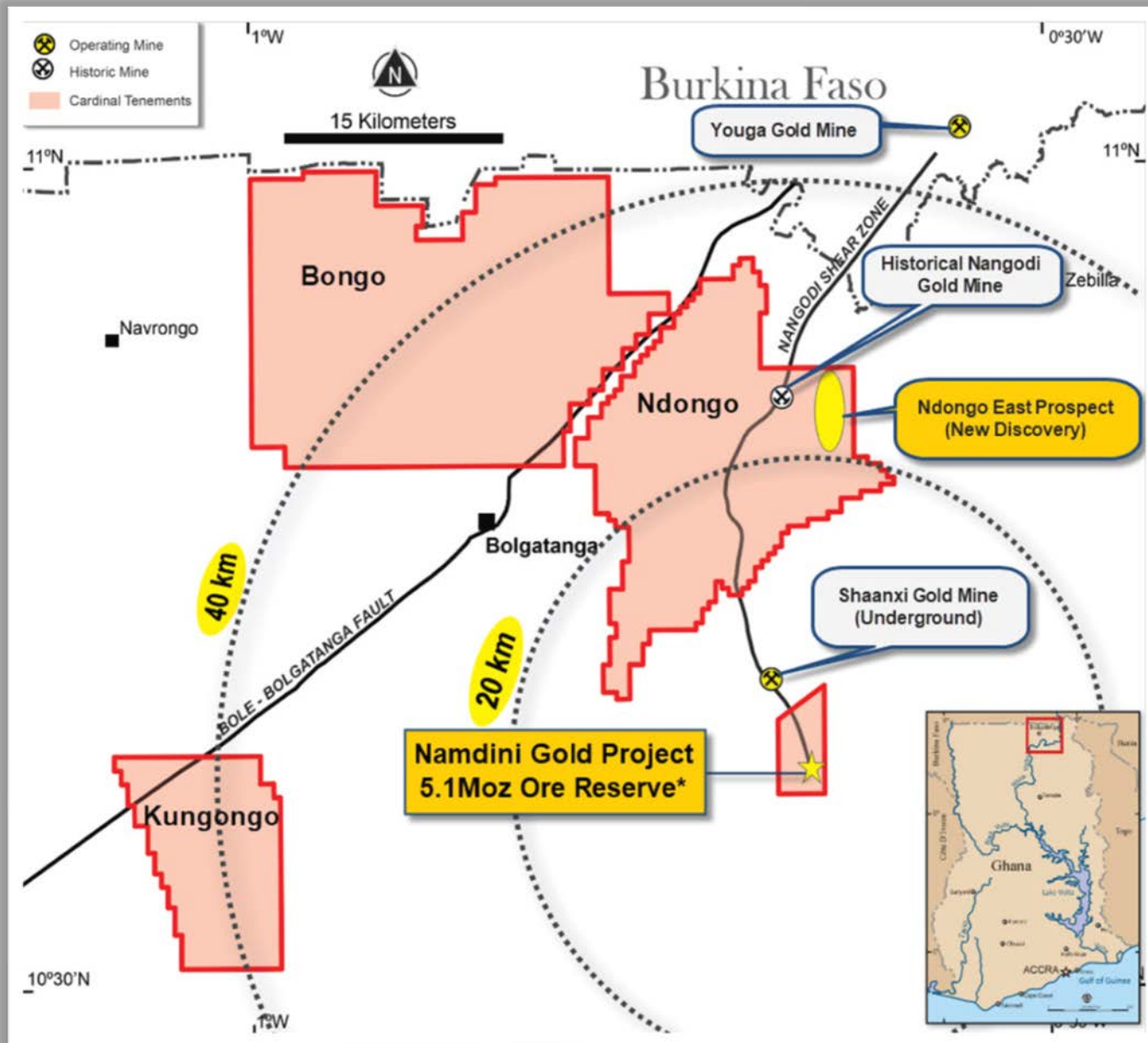


| Ore Reserve category       | Type         | Ore Tonnes<br>(Fully Diluted)<br>(Mt) | Diluted Contained<br>Ounces (koz) | Grade<br>(Au g/t) |
|----------------------------|--------------|---------------------------------------|-----------------------------------|-------------------|
| Proved                     | Oxide        | 1.03                                  | 40.0                              | 1.21              |
| Proved                     | Fresh        | 6.35                                  | 271                               | 1.33              |
| <b>Proved Reserves</b>     | <b>Total</b> | <b>7.38</b>                           | <b>311</b>                        | <b>1.31</b>       |
| Probable                   | Oxide        | 3.02                                  | 105                               | 1.08              |
| Probable                   | Fresh        | 128.2                                 | 4,638                             | 1.13              |
| <b>Probable</b>            | <b>Total</b> | <b>131.2</b>                          | <b>4,743</b>                      | <b>1.12</b>       |
| <b>Proved and Probable</b> | <b>Oxide</b> | <b>4.04</b>                           | <b>144</b>                        | <b>1.11</b>       |
| <b>Proved and Probable</b> | <b>Fresh</b> | <b>134.5</b>                          | <b>4,909</b>                      | <b>1.13</b>       |
| <b>Proved and Probable</b> | <b>Total</b> | <b>138.6</b>                          | <b>5,054</b>                      | <b>1.13</b>       |

## Notes on Table (Ore Reserve Estimate as at April 2019):

- The Ore Reserve conforms with and uses the JORC 2012 Code definitions
- The Ore Reserve is evaluated using a gold price of US\$1,300/oz
- The Ore Reserve is evaluated using a fixed cut-off grade of 0.5 g/t Au
- Ore block grade and tonnage dilution was incorporated through the use of an MIK estimation model that has demonstrated to incorporate an expected level of equivalent ore loss and dilution for the scale of mining envisaged
- All figures are rounded to reflect appropriate levels of confidence
- Apparent differences may occur due to rounding

# Northern Ghana - New Exploration Frontier



## ■ Shallow high-grade discovery at Ndongo East

o Recent significant drill hole intersections<sup>1</sup> include:

- **5.3m @ 13.9g/t Au** from 78m
- **5.5m @ 3.8g/t Au** from 31m
- **3.7m @ 3.3g/t Au** from 59m
- **2.7m @ 7.7g/t Au** from 19m
- **2.0m @ 18.3g/t Au** from 59m
- **14.0m @ 7.0g/t Au** from 69m
- **8.3m @ 11.3g/t Au** from 76m
- **5.2m @ 4.5g/t Au** from 60m

<sup>1</sup> Refer to ASX/TSX press releases dated 16 July and 29 August 2018, 23 January 25 March and 10 July 2019

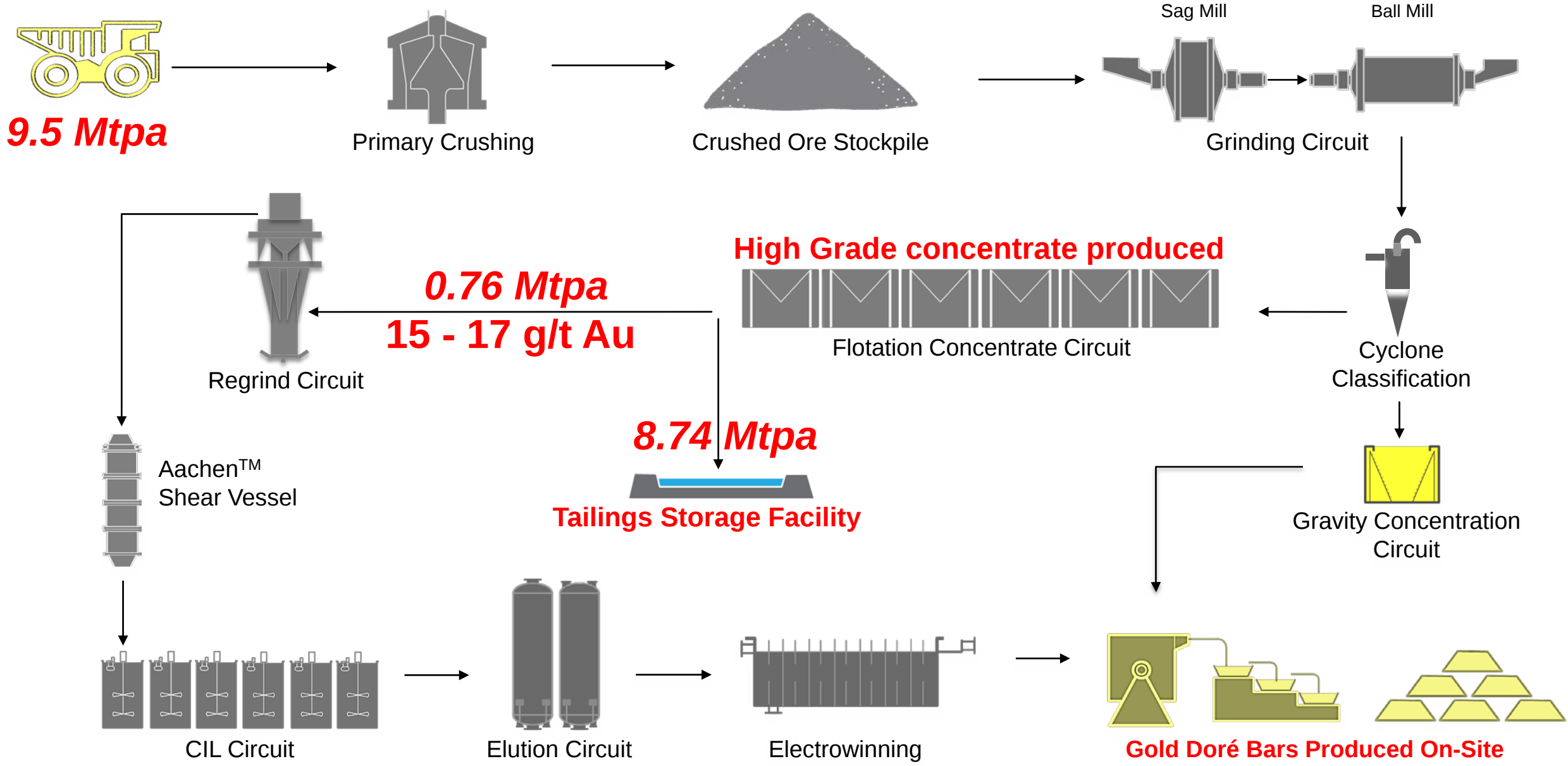
\* 138.6 Mt @ 1.13 g/t Au; 0.5 g/t cut-off, inclusive of 0.4Moz Proved (7.4 Mt @ 1.31 g/t Au) and 4.7Moz Probable (131.2 Mt @ 1.12 g/t Au); 0.5 g/t Au cut-off.

# Quality Partners

Lycopodium

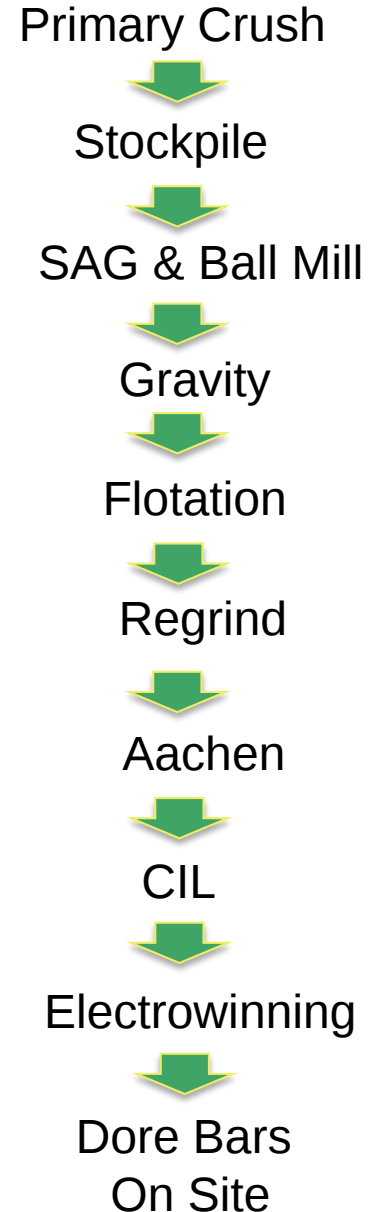


# FS Process Flowsheet



# Conventional Flowsheet

- **9.5 Mtpa Front End – 0.75 Mtpa Back End – NOT Whole of Ore Circuit**
  - *Lower Capex than Whole of Ore due to small back end circuit*
  - Primary Crusher 60" x 89" unit and conveyors capable of 9.5Mtpa (3000 tph)
  - Primary Grinding Design on P80 106µm and 85<sup>th</sup> percentile indices
  - Pebble crushing designed on 25% of new feed recycle
  - Gravity circuit sized with 2 units at 140% of mill feed
  - Flotation Cells uses a 2 times scale up factor on testwork
  - Flotation mass pull 7.5% yielding 0.75Mtpa (89 tph) to Regrind & CIL
  - Regrind designed on P90 9µm with Outotec HIGmill™
  - Aachen™ Scrubbing Process
  - Small CIL Circuit – 0.75Mtpa (89 tph) low OPEX and CAPEX back end circuit



# Namdini Process Technology



- **Outotec Regrind HIGmill™**
  - Proven – developed over last 40 years
  - Over 200 mills installed on all continents
  - Flat grinding discs with counter rings
  - Minimises short-circuiting / dead zones
  - Maximises media-slurry contact
  - Largest stirred mills worldwide – 5 MW
  - Direct 1:1 scale-up methodology
  - Internal classification
  - ***Namdini ore has been pilot scale tested***

# Namdini Process Technology



- **Aachen™ Scrubbing Process**
  - Widely used by Barrick in Africa
  - Improves gold recovery
  - Scrubbing process – removes particle oxidation layers
  - Increases kinetics
  - Improves surface activation
  - Lowers Opex – improves power and reagent use

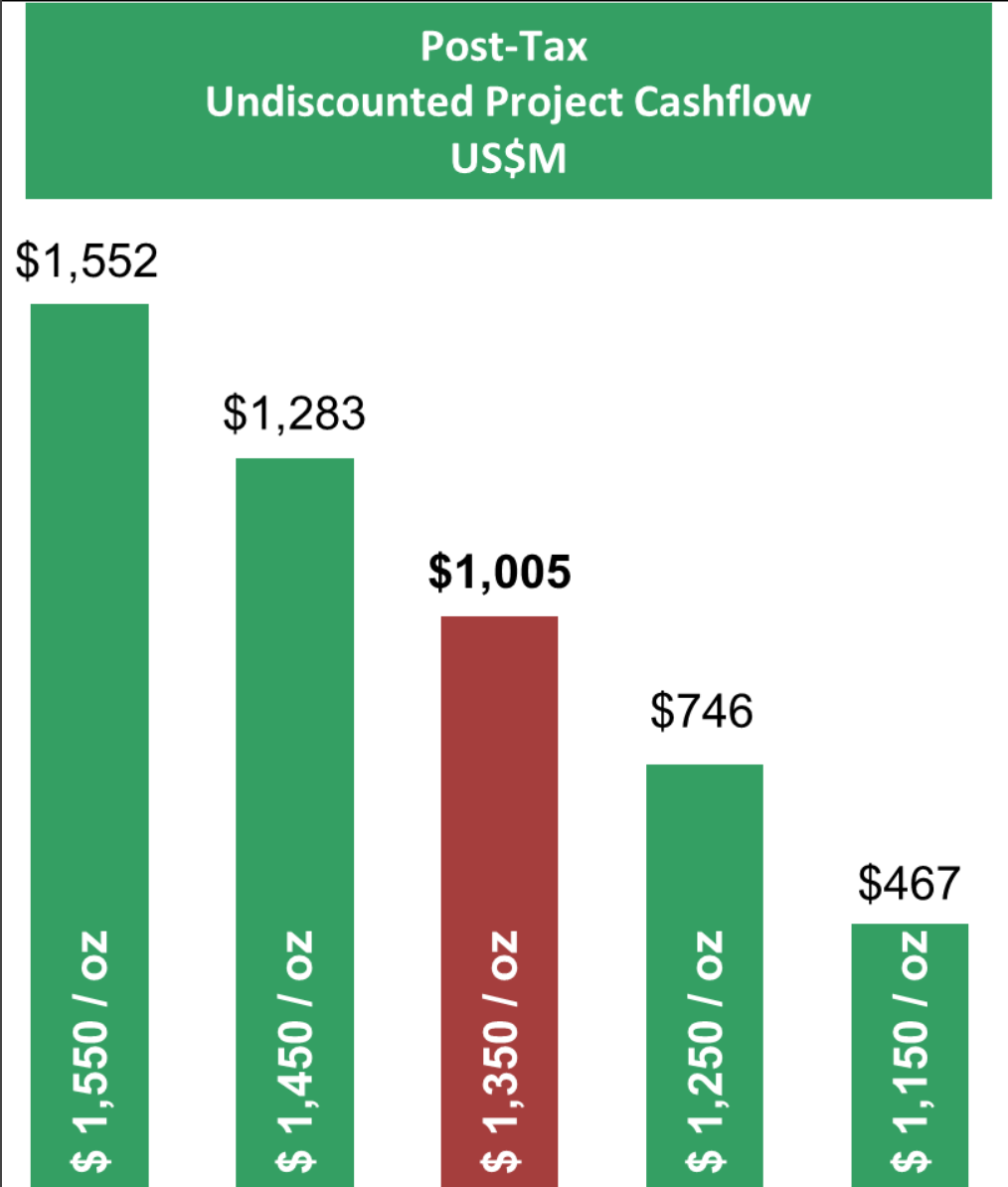
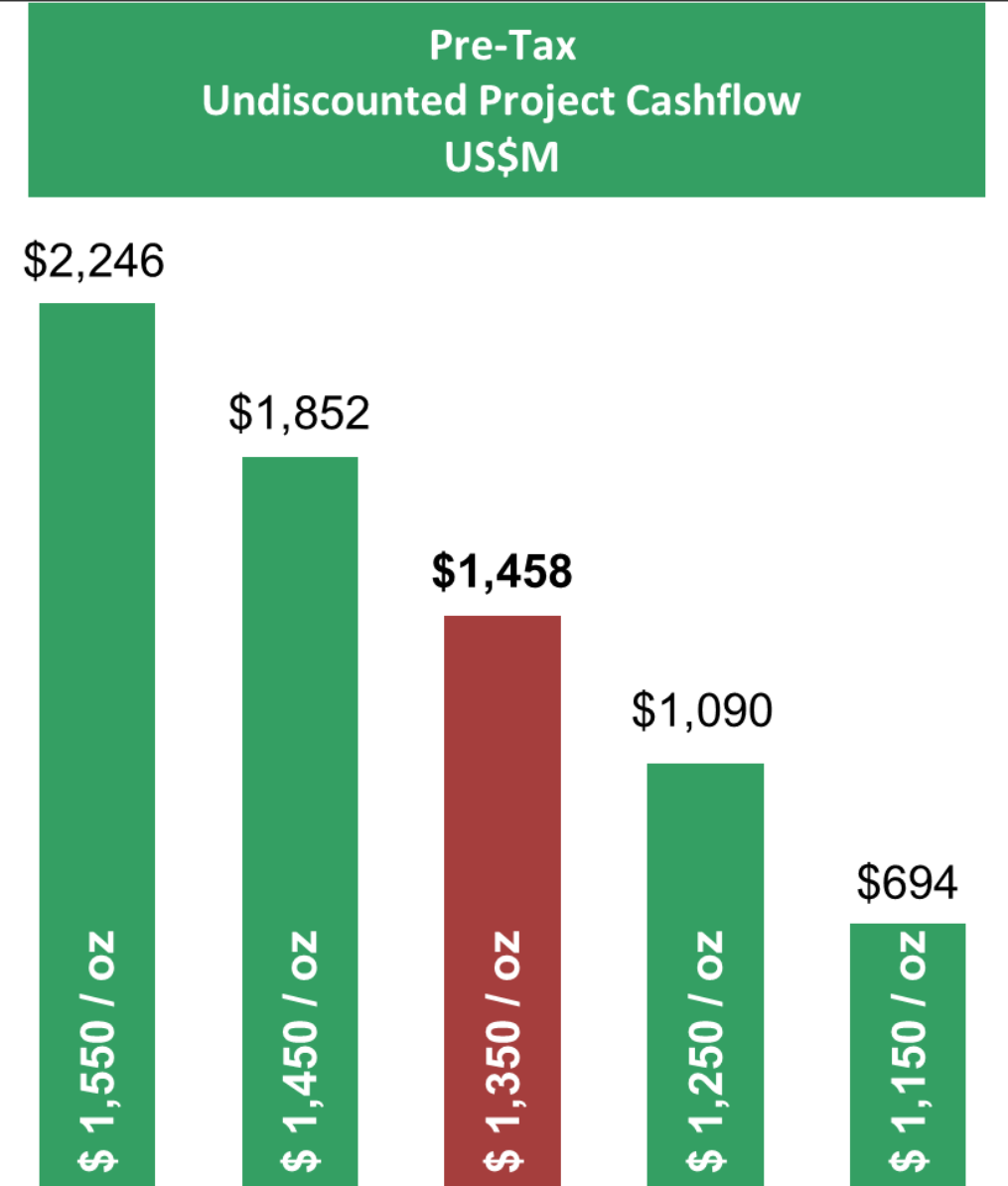
| KEY ECONOMIC RESULTS                              |                        | UNIT      | Feasibility Study |
|---------------------------------------------------|------------------------|-----------|-------------------|
| Gold Price                                        | <i>Pit Design</i>      | US\$ / oz | 1,235             |
|                                                   | <i>Financial Model</i> |           | 1,350             |
| Capital Cost <i>(including \$42M contingency)</i> |                        | US\$ M    | 390               |
| All in Sustaining Costs <i>(AISC)<sup>1</sup></i> | <i>Starter Pit</i>     | US\$ / oz | 585               |
|                                                   | <i>Life of Mine</i>    |           | 895               |
| Total Project Payback                             |                        | months    | 21                |
| Pre-Tax NPV <sup>5%</sup>                         |                        | US\$ M    | 914               |
| Post-Tax NPV <sup>5%</sup>                        |                        | US\$ M    | 590               |
| Pre-Tax IRR                                       |                        | %         | 43                |
| Post-Tax IRR                                      |                        | %         | 33                |

<sup>1</sup> Cash Costs + Royalties + Levies + Life of Mine Sustaining Capital Costs (World Gold Council Standard).  
 Royalties calculated at a rate of 5.5% and a corporate tax rate of 32.5%; both subject to negotiation.

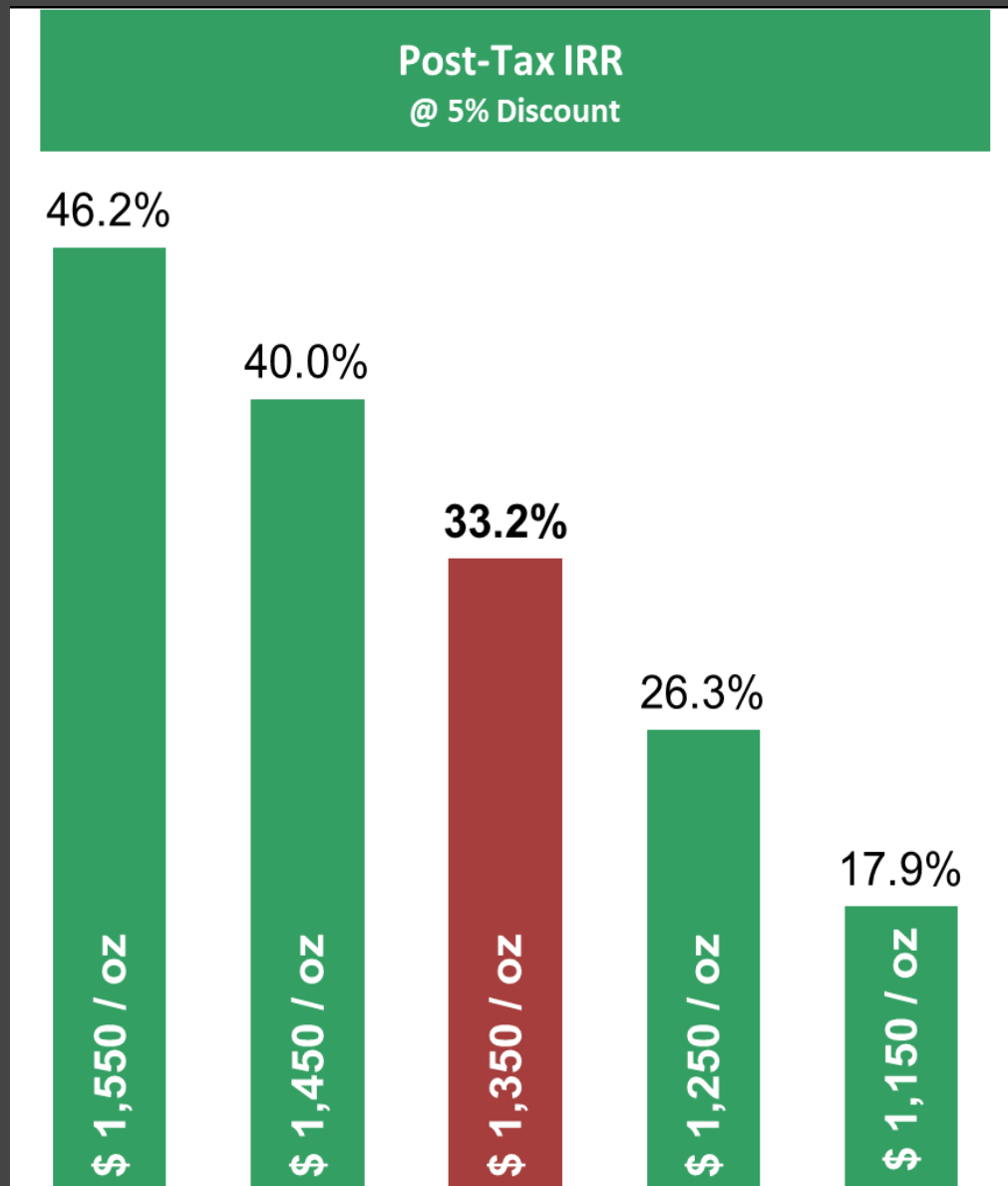
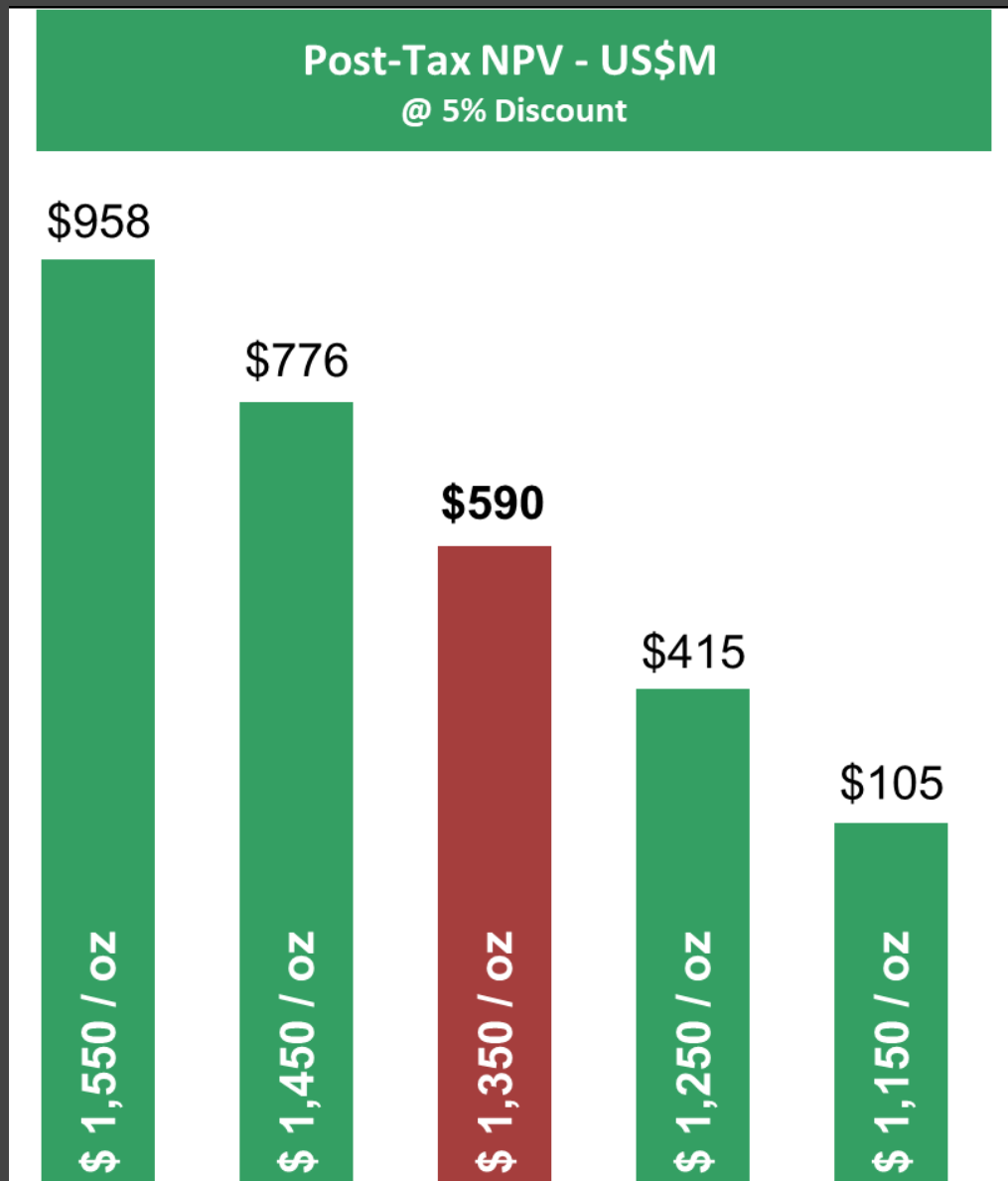
# FS Physicals

| ESTIMATED PRODUCTION RESULTS                                     |  | UNIT      | Starter Pit |  | Life of Mine |  |
|------------------------------------------------------------------|--|-----------|-------------|--|--------------|--|
| Gold Price – Financial Model                                     |  | US\$ / oz | 1,350       |  |              |  |
| Gold Produced <small>(Average for full production years)</small> |  | (oz / yr) | 361,000     |  | 287,000      |  |
| Gold Produced                                                    |  | (oz)      | 1,100,000   |  | 4,177,000    |  |
| Gold Head Grade                                                  |  | g/t Au    | 1.41        |  | 1.13         |  |
| Gold Recovery                                                    |  | %         | 85          |  | 83           |  |
| Ore Mined <small>(0.5 g/t cut-off grade)</small>                 |  | Tonnes    | 47,000,000  |  | 138,600,000  |  |
| Strip Ratio                                                      |  | W:O       | 0.9 : 1     |  | 1.9 : 1      |  |
| Mine Life                                                        |  | years     | 2.3         |  | 15           |  |
| Capital Cost <small>(including \$42M contingency)</small>        |  | US\$ M    | 390         |  |              |  |

# FS Financial Sensitivity *(Cashflow – Life of Mine)*



# FS Financial Sensitivity (*Post Tax NPV & IRR – Life of Mine*)



# Current Scenario

| Feasibility Study +USD \$200     |         |             |             |
|----------------------------------|---------|-------------|-------------|
| Gold Price                       | US\$/oz | USD \$1,350 | USD \$1,550 |
| Gold Production                  | oz      | 4,177,000   | 4,177,000   |
| AISC                             | US\$/oz | 895         | 895         |
| Payback period                   | months  | 21          | 9           |
| Undiscounted cashflow - Pre tax  | US\$    | 1,438       | 2,246       |
| Undiscounted cashflow - Post tax | US\$    | 1,005       | 1,552       |
| NPV <sup>5%</sup> - Pre tax      | US\$    | 914         | 1,438       |
| NPV <sup>5%</sup> - Post tax     | US\$    | 590         | 958         |
| IRR - Pre tax                    | %       | 43.0%       | 57.4%       |
| IRR - Post tax                   | %       | 33.2%       | 46.2%       |

# Development Timeline

|                                       | 2019<br>Q4 | 2020<br>H1 | 2020<br>H2 | 2021<br>H1 | 2021<br>H2 | 2022<br>H1 | 2022<br>H2 |
|---------------------------------------|------------|------------|------------|------------|------------|------------|------------|
| Front End Engineering & Design (FEED) |            |            |            |            |            |            |            |
| Construction                          |            |            |            |            | *          |            |            |
| Commissioning                         |            |            |            |            |            | *          |            |
| Gold Production                       |            |            |            |            |            |            | *          |

\* The Company's Construction, Commissioning and Gold Production schedules within the development timeline assumes that the Company is fully funded. The actual timelines will depend upon the manner and timing of the Company's financing plans. Dates are therefore indicative only.

**Cardinal Australia Office**

Suite 1, 28 Ord Street,  
West Perth, WA, 6005  
PO Box 829, West Perth, WA, 6872  
Australia

P +61 8 6558 0573

E [info@cardinalresources.com.au](mailto:info@cardinalresources.com.au)

**Cardinal Ghana Office**

Durugu Residential Area,  
Kumbosco, Bolgatanga  
PO Box 350, Bolgatanga  
Ghana

P + 233 382 021 838

E [info@cardinalresources.com.au](mailto:info@cardinalresources.com.au)

**Canadian Office**

The Exchange Tower  
Suite 1822  
130 King Street West  
Toronto, Ontario  
MSX 1E3 Canada

P +1 647 256 1922

E [info@cardinalresources.com.au](mailto:info@cardinalresources.com.au)

A large, dark grey star graphic is centered on the right side of the slide. The background is split into green and red sections by the star's points.

**Thank you**

# Disclaimer and Forward Looking Statements

## FORWARD LOOKING STATEMENTS

This presentation contains “forward-looking statements”, within the meaning of Section 27A of the United States Securities Act of 1933, as amended and Section 21E of the United States Exchange Act of 1934, as amended and forward-looking information as defined under applicable Canadian securities legislation (collectively, “forward-looking statements”). These forward-looking statements relate to, among other things, the objectives, goals, strategies, beliefs, intentions, plans, estimates and outlook of Cardinal Resources. Ltd (“Cardinal Resources” or the “Company”). Forward-looking statements can generally be identified by the use of words such as “believe,” “anticipate,” “expect,” “intend,” “plan,” “goal,” “will,” “may,” “target,” “potential” and other similar expressions. In addition, any statements that refer to expectations, projections or other characterizations of future events or circumstances are forward-looking statements. Forward-looking statements are based on estimates and assumptions made by Cardinal Resources in light of its experience and perception of historical trends, current conditions and expected future developments, as well as other factors Cardinal Resources believes are appropriate in the circumstances. These estimates and assumptions are inherently subject to significant business, economic, competitive and other uncertainties and contingencies, many of which, with respect to future events, are subject to change. Although Cardinal Resources believes that the expectations reflected in such forward-looking statements are reasonable, undue reliance should not be placed on such statements.

In making the forward-looking statements in this presentation, Cardinal Resources has made several assumptions, including, but not limited to assumptions concerning: production costs; statements with respect to the future price of gold, the estimation of mineral reserves and resources, the realization of mineral reserve estimates, the timing and amount of estimated future production, costs of production, capital expenditures, costs and timing of the development of new deposits, success of exploration activities, permitting time lines, currency exchange rate fluctuations, requirements of additional capital, government regulation of mining operations, environmental risks, costs of closure of various operations and changes to the political stability or government regulation in the country in which Cardinal Resources operates .

Actual results may differ materially from those expressed or implied in the forward-looking statements contained in this presentation. Important factors that could cause actual results to differ materially from these expectations are discussed in greater detail under the heading “Risk Factors” in Cardinal Resource’s annual information form for the current year available on [www.sedar.com](http://www.sedar.com). When relying on forward-looking statements to make decisions with respect to Cardinal Resources, carefully consider these risk factors and other uncertainties and potential events. Cardinal Resources undertakes no obligation to update or revise any forward-looking statement, except as required by law.

Although Cardinal Resources has carefully prepared and verified the Mineral Resource and Ore Reserve figures presented herein, such figures are estimates, which are, in part, based on forward-looking information and no assurance can be given that the indicated level of gold will be produced. Estimated Mineral Resources and Ore Reserves may have to be recalculated based on actual production experience. Market price fluctuations of gold as well as increased production costs or reduced recovery rates and other factors may render the present Proven and Probable Ore Reserves unprofitable to develop at a particular site or sites for periods of time.

## FEASIBILITY STUDY – CAUTIONARY STATEMENT (REFER PRESS RELEASE DATED 28 OCTOBER 2019)

The FS is based upon a Proven 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 Proven and 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. The FS is based on material assumptions outlined in the FS Report. The Company has concluded it has a reasonable basis for providing the forward-looking statements in this document.

# Competent Person's Statement and Disclaimer

## QUALIFIED PERSON - COMPETENT PERSON'S STATEMENT

**Mr David Gordon**, who is a full-time employee of Lycopodium Minerals Ltd, is a Qualified Person as defined by National Instrument 43-101 - Standards of Disclosure for Mineral Projects ("NI43-101"). Mr Gordon holds a Qualified Person status being a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM). Mr Gordon has no economic, financial or pecuniary interest in the Company.

**Mr. Daryl Evans**, who is a full time employee of Independent Metallurgical Operations Pty Ltd, is a Qualified Person as defined by National Instrument 43-101- Standards of Disclosure for Mineral Projects ("NI43-101"). Mr. Evans holds a Qualified Person status being a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM). Mr. Evans is an independent consultant appointed by Cardinal. Mr Evans has no economic, financial or pecuniary interest in the company

**Mr Nicolas Johnson**, a member of the Australian Institute of Geoscientists, who is an employee of MPR Geological Consultants Pty Ltd, has compiled the information relating to the Mineral Resources in the Resource Summary of the Namdini Project. 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 and a Qualified Person as defined by the NI43-101 instrument. Mr Johnson has no economic, financial or pecuniary interest in the company.

**Mr. Richard Bray** is a Registered Professional Geologist with the Australian Institute of Geoscientists. Mr Bray has compiled the information in this presentation that relates to the Exploration Results and Mineral Resources. Mr. Bray has more than 5 years' experience relevant to the styles of mineralisation and type of deposit 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 as defined by the NI43-101 instrument. Mr. Bray is a fulltime employee of Cardinal Resources Limited and holds equity securities in the Company.

**Mr. Ekow Taylor** is a Chartered Professional Geologist with the Australasian Institute of Mining and Metallurgy. Mr Taylor has compiled the information in this presentation that relates to the Exploration Results and Mineral Resources. Mr. Taylor has more than 5 years' experience relevant to the styles of mineralisation and type of deposit 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 as defined by the NI43-101 instrument. Mr. Taylor is a fulltime employee of Cardinal Resources Limited and holds equity securities in the Company.

**Mr Glenn Turnbull**, a Competent Person who is a Chartered Engineer and a Member of the Australasian Institute of Mining and Metallurgy and a full-time employee of Golder Associates Pty Ltd has compiled the information relating to the Ore Reserves in the Ore Reserve Summary. 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

## NO NEW INFORMATION

This Presentation contains information extracted from ASX and TSX market announcements reported in accordance with the JORC Code (2012) and NI 43-101 and available for viewing at [www.cardinalresources.com.au](http://www.cardinalresources.com.au)

Cardinal Resources Limited ("Cardinal" or the "Company") confirms that it is not aware of any new information or data that materially affects the information included in any original ASX market announcements carried out at the Company's projects and that all material assumptions and technical parameters underpinning the exploration activities and estimates of Mineral Resources in the relevant market announcements continue to apply and have not been materially 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.

Please also refer to the Company's Annual and Quarterly Reports for further background information which are available on the Company's website.