

CARDINAL RESOURCES LTD (CDV)

On the hunt for the next Namdini

One of our Resource Analysts (Michael Scantlebury) recently visited Cardinal Resources (CDV) Namdini gold project, in northern Ghana, along with some of the key regional prospects which are currently being explored. The site visit reaffirmed our opinion of the high-quality nature of Namdini (largest undeveloped gold project in West Africa) and the strong regional exploration potential (high prospectivity but largely under explored).

The northern parts of Ghana have long been considered prospective for significant gold mineralisation but due to the perceived thick Volta Basin sedimentary cover, the vast majority of the key Birimian-aged terrane has been obscured. The discovery of the large Namdini gold deposit (7Moz) by CDV in 2014 confirmed prospectivity and that the same fertile geological structures (Bole-Bolgatanga and Nangodi Shear Zones) located in southern part of the country continue into northern Ghana. CDV has the first mover advantage and a dominant land position (295km² in the Ndongo project alone and +900km² in total) covering numerous promising but early-stage targets, we believe CDV is well placed to unlock additional exploration value.

Ndongo extensive artisanal workings highlighting endowment

The Ndongo project area is currently the main focus for regional exploration with numerous prospects including Zupeliga, Zug, Dusi, McGuinness, Granite Dome (McGuinness South), Nangodi (historical mine) and Nangodi East being advanced. The project contains a large amount of artisanal workings (active and historical) which is an encouraging sign and highlights gold endowment. In addition, the regional geology includes granite intrusions, and extensive greenstones, along with key structures (structural "jogs" and pressure shadows) which enhances the discovery potential of the area. The Nangodi historical mine (1936-1942) produced 18.6koz at ~24g/t with a shaft down to 300m vertical is one of the targets CDV plans to drill-test. Although speculative, if CDV was to make a discovery within the Ndongo project it could be within trucking distance to the central processing hub at Namdini, providing meaningful impact on projects economics. CDV currently has 7 drill rigs active across its Namdini and Ndongo projects.

Updated PEA now due early Q3 CY18 with PFS to follow

CDV was due to release the Namdini pre-feasibility study (PFS) in late Q2 CY18, but has now decided to release an updated Preliminary Economic Assessment (PEA). The updated PEA will incorporate the latest resources, which now includes some 6.5Moz in the higher confidence Indicated category for a potential larger mining inventory. An improved mining inventory and schedule provides opportunities to further increase project scale, if deemed feasible, with >9.5Mtpa options being scoped. Increased production is expected to have economic benefits but likely higher capex.

Maintain Speculative Buy with unchanged price target of \$1/s

CDV is currently trading at a discount to our valuation (\$0.84/s 0.58x NAV). We believe that CDV's current share price does not reflect Namdini's true value or the potential upside from regional exploration. Our NAV includes a modest A\$60M (~6cps) of exploration value. We maintain our **Speculative Buy** recommendation with an unchanged 12-month price target of \$1.00/s. Our CDV spot NAV is \$1.00/s. Cash was ~A\$13M at MarQ end.

24 May 2018

Share Price	\$0.490
Valuation	\$0.84
Price Target (12 month)	\$1.00

Brief Business Description:
West African gold explorer and developer

Hartleys Brief Investment Conclusion
New significant gold discovery (Namdini) in northern Ghana. Favourable economics. Updated PEA due early Q3 with PFS to follow. Strong regional exploration potential.

Directors
Kevin Tomlinson (Non-Exec Chairman)
Archie Koimtsidis (MD & CEO)

Top Shareholders	
Gold Fields (AUS)	11.2%
Bank of Nova Scotia (Dynamic Fund)	9.7%
Van Eck Associates Corp (USA)	7.5%
Royal Bank of Canada (CAN)	7.1%
Sprott Asset Management (CAN)	5.0%

Company Address
Suite 1, 28 Ord Street,
West Perth, WA, 6005

Issued Capital	373.2m
- fully diluted (ITM options)	493.4m

Market Cap	A\$182.9m
- fully diluted (ITM options)	A\$241.7m

Cash (est)	A\$13.3m
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Debt (est)	A\$0.0m
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EV	A\$169.6m
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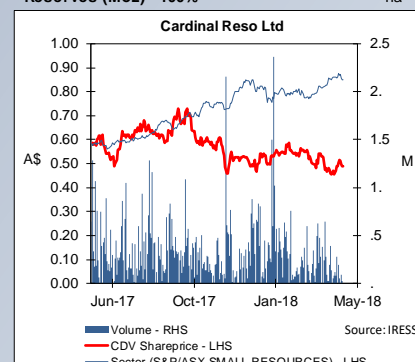
EV/Resource oz	A\$24/oz
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EV/Reserve oz	na
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Prelim. (A\$m)	FY20e	FY21e	FY20e
Prod (Koz Au) - proj	0	299	299
Prod (Koz Au) - attr	0	270	270
Op Cash Flw	-15	150	164
Norm NPAT	-28	80	79
CF/Share (cps)	-2.3	16.2	17.7
EPS (cps)	12.4	12.1	8.7
P/E	-8.0	4.0	4.0

Resources (Moz) - 100%	7.0
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Reserves (Moz) - 100%	na
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Mike Millikan
Resources Analyst
Ph: +61 8 9268 2805
E: mike.millikan@hartleys.com.au

Michael Scantlebury
Associate Analyst
Ph: +61 8 9268 2837
E: michael.scantlebury@hartleys.com.au

Hartleys has assisted in the completion of capital raisings in the past 12 months for Cardinal Resources Limited for which it has earned fees. The analysts have a beneficial interest in CDV shares. An analyst recently visited site at the expense of CDV, all associated costs covered by CDV.

SUMMARY MODEL

Cardinal Reso Ltd CDV		Share Price \$0.490													
Key Market Information															
Share Price	\$0.490														
Market Capitalisation - ordinary	A\$182.9m														
Net Cash (debt)	\$13.3m														
Market Capitalisation - fully diluted	A\$242m														
EV - ordinary	A\$170m														
Issued Capital	373.2m														
Options (ITM)	120.2m														
Issued Capital (fully diluted inc. all options)	493.4m														
Issued Capital (fully diluted inc. all options and new capital)	928.2m														
EV - fully diluted	A\$201m														
Valuation	\$0.84														
12month price target	\$1.00														
P&L	Unit	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22								
Net Revenue	A\$m	0.0	0.0	0.0	0.0	392.6	390.0								
Total Costs	A\$m	-21.5	-25.7	-14.5	-14.8	-227.0	-226.0								
EBITDA	A\$m	-21.5	-25.7	-14.5	-14.8	165.6	163.9								
- margin		-	-	-	-	42%	42%								
Depreciation/Amort	A\$m	-0.4	-1.1	-2.7	-25.2	-50.8	-51.8								
EBIT	A\$m	-21.9	-26.7	-17.1	-40.0	114.8	112.1								
Net Interest	A\$m	0.1	0.1	0.1	0.1	0.1	0.1								
Norm. Pre-Tax Profit	A\$m	-21.8	-26.6	-17.0	-39.9	114.9	112.3								
Reported Tax Expense	A\$m	0.0	0.0	0.0	0.0	0.0	0.0								
Normalised NPAT	A\$m	-15.3	-18.6	-11.9	-27.9	80.4	78.6								
Abnormal Items	A\$m	-6.5	-8.0	-5.1	-12.0	34.5	33.7								
Reported Profit	A\$m	-21.7	-26.6	-17.0	-39.9	114.9	112.3								
Minority	A\$m	0.0	0.0	0.0	0.0	0.0	0.0								
Profit Attrib	A\$m	-21.7	-26.6	-17.0	-39.9	114.9	112.3								
Balance Sheet	Unit	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22								
Cash	A\$m	28.6	13.3	27.9	3.9	143.7	264.7								
Other Current Assets	A\$m	1.1	1.0	1.0	1.0	33.8	33.6								
Total Current Assets	A\$m	29.6	14.3	28.9	4.8	177.5	298.3								
Property, Plant & Equip.	A\$m	0.5	-0.6	-3.1	534.0	489.7	447.0								
Exploration	A\$m	0.0	19.5	27.5	35.5	39.5	43.5								
Investments/other	A\$m	0.0	0.0	0.0	0.0	0.0	0.0								
Tot Non-Curr. Assets	A\$m	0.5	18.9	24.4	569.5	529.2	490.5								
Total Assets	A\$m	30.1	33.2	53.3	574.3	706.7	788.8								
Short Term Borrowings	A\$m	-	-	-	-	-	-								
Other	A\$m	3.9	2.1	1.2	1.2	18.7	18.6								
Total Curr. Liabilities	A\$m	3.9	2.1	1.2	1.2	18.7	18.6								
Long Term Borrowings	A\$m	-	-	-	318.4	318.4	288.4								
Other	A\$m	-	-	-	-	-	-								
Total Non-Curr. Liab.	A\$m	-	-	-	318.4	318.4	288.4								
Total Liabilities	A\$m	3.9	2.1	1.2	319.7	337.1	307.0								
Net Assets	A\$m	26.2	31.1	52.1	254.6	369.5	481.8								
Net Debt	A\$m	-28.6	-13.3	-27.9	314.6	174.8	23.7								
Cashflow	Unit	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22								
Operating Cashflow	A\$m	-18.0	-7.9	-7.4	-14.8	150.2	164.1								
Income Tax Paid	A\$m	0.0	0.0	0.0	0.0	0.0	0.0								
Interest & Other	A\$m	0.0	0.1	0.1	0.1	0.1	0.1								
Operating Activities	A\$m	-18.0	-7.8	-7.3	-14.7	150.3	164.2								
Property, Plant & Equip.	A\$m	-0.3	0.0	-0.1	-562.3	-6.5	-9.1								
Exploration and Devel.	A\$m	0.0	-19.5	-8.0	-8.0	-4.0	-4.0								
Other	A\$m	0.0	0.0	0.0	0.0	0.0	0.0								
Investment Activities	A\$m	-0.3	-19.5	-8.1	-570.3	-10.5	-13.1								
Net Borrowings	A\$m	0.0	0.0	0.0	318.4	0.0	-30.0								
Equity or "tbc capital"	A\$m	42.1	12.0	30.0	242.4	0.0	0.0								
Dividends Paid	A\$m	0.0	0.0	0.0	0.0	0.0	0.0								
Financing Activities	A\$m	42.1	12.0	30.0	560.9	0.0	-30.0								
Net Cashflow	A\$m	23.7	-15.3	14.6	-24.1	139.8	121.1								
Shares	Unit	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22								
Ordinary Shares - End	m	305.8	371.4	411.4	926.4	926.4	926.4								
Ordinary Shares - Weighted	m	236.8	338.6	391.4	648.9	926.4	926.4								
Diluted Shares - Weighted	m	236.7	338.1	390.9	588.3	805.8	805.8								
Ratio Analysis	Unit	Jun 17	Jun 18	Jun 19	Jun 20	Jun 21	Jun 22								
Cashflow Per Share	A\$ cps	-7.6	-2.3	-1.9	-2.3	16.2	17.7								
Cashflow Multiple	x	0.0	0.0	0.0	0.0	0.0	0.0								
Earnings Per Share	A\$ cps	-9.2	-7.9	-4.3	-6.1	12.4	12.1								
Price to Earnings Ratio	x	-5.3	-6.2	-11.3	-8.0	4.0	4.0								
Dividends Per Share	AUD	-	-	-	-	-	-								
Dividend Yield	%	0%	0%	0%	0%	0%	0%								
Net Debt / Net Debt + Equity	%	1198%	-75%	-116%	55%	32%	5%								
Interest Cover	X	146.7	254.0	162.8	379.8	na	na								
Return on Equity	%	na	na	na	na	0.2	0.2								
Analyst: Mike Millikan +61 8 9268 3045 "tbc capital" could be equity or debt. Our valuation is risk-adjusted for how this may be obtained. Sources: IRESS, Company Information, Hartleys Research															
Speculative Buy															
Directors				Company Information											
Kevin Tomlinson (Non-Exec Chairman)				Suite 1, 28 Ord Street,											
Archie Kaimisidis (MD & CEO)				West Perth, WA, 6005											
Malik Easah (Exec Director)				Phone: +61 8 6558 0573											
Robert Schafer (Non-Exec Director)															
Jacques McMullen (Non-Exec Director)															
Michele Muscillo (Non-Exec Director)															
Bruce Lifford (Project Manager)				Alec Rowlands (IR/Corp Dev)		www.cardinalresources.com.au									
Richard Bray (Principal Geologist)															
Top Shareholders - est				m shares		%									
Gold Fields (AUS)				41.7		11.2%									
Bank of Nova Scotia (Dynamic Fund)				36.2		9.7%									
Van Eck Associates Corp (USA)				28.0		7.5%									
Royal Bank of Canada (CAN)				26.4		7.1%									
Sprott Asset Management (CAN)				18.6		5.0%									
Commonwealth Bank Australia (AUS)				17.8		4.8%									
Directors				15.9		4.3%									
Reserves & Resources				Mt		g/t Au		Moz Au		LC					
Resources - Namdini				Mar-18											
Measured				0		0.0		0.0		0.5g/t Au					
Indicated				180		1.1		6.5		0.5g/t Au					
Inferred				13		1.2		0.5		0.5g/t Au					
Total				193		1.1		7.0		0.5g/t Au					
PEA Mining Inventory				113		1.1		4.1		0.5g/t Au					
Modelled Inventory				140		1.1		5.0		0.5g/t Au					
Production Summary				Unit		Jun 18		Jun 19		Jun 20		Jun 21		Jun 22	
Mill Throughput				Mt		0.0		0.0		0.0		9.5		9.5	
Strip ratio (W:O)				x		0.0		0.0		0.0		1.2		1.2	
Recovered grade				g/t		0.0		0.0		0.0		1.0		1.0	
Combined Recovery & Payability				%		0.0%		0.0%		0.0%		86.0%		86.0%	
Gold - proj 100%				koz		0.0		0.0		0.0		299.4		299.4	
Gold - attr. CDV				koz		0.0		0.0		0.0		269.5		269.5	
M&I Resource Conversion				%		-13%		-13%		-13%		-13%		-11%	
Mine Life				yr		15		15		15		14		13	
Costs				Unit		Jun 18		Jun 19		Jun 20		Jun 21		Jun 22	
Cost per milled tonne				\$/t		-		-		-		23.2		23.1	
EBITDA / tonne milled ore				\$/t		-		-		-		17.4		17.3	
C1: Operating Cash Cost = (a)				\$/oz		-		-		-		662		659	
(a) + Royalty = (b)				\$/oz		-		-		-		735		731	
C2: (a) + depreciation & amortisation = (c)				\$/oz		-		-		-		832		832	
(c) + actual cash for development = (d)				\$/oz		-		-		-		697		703	
C3: (c) + Royalty				\$/oz		-		-		-		905		904	
(d) + Royalty				\$/oz		-		-		-		770		775	
All In Sustaining Cost (AISC)				\$/oz		-		-		-		927		923	
All In Sustaining Cost (AISC)				\$/oz		-		-		-		716		717	
Price Assumptions				Unit		Jun 18		Jun 19		Jun 20		Jun 21		Jun 22	
AUD/USD				A\$/US\$		0.72		0.75		0.76		0.77		0.78	
Gold				US\$/oz		1380		1380		1275		1250		1250	
Gold				A\$/oz		1920		1844		1675		1619		1608	
Hedging				Jun 18		Jun 19		Jun 20		Jun 21		Jun 22			
Hedges maturing?				No		No		No		No		No			
Sensitivity Analysis				Valuation				FY21 NPAT							
Base Case				0.84				114.9							
Spot Prices				1.00 (19.7%)				130.7 (13.7%)							
Spot USD/AUD 0.76, Gold \$1294/oz.															
AUD/USD +/-10%				0.78 / 0.92 (-7.6% / 9.3%)				99.2 / 134.1 (-13.7% / 16.7%)							
Gold +/-10%				0.99 / 0.69 (18.0% / -18.0%)				152.0 / 77.8 (32.3% / -32.3%)							
Production +/-10%				0.84 / 0.84 (0.0% / 0.0%)				114.9 / 114.9 (0.0% / 0.0%)							
Operating Costs +/-10%				0.76 / 0.92 (-9.6% / 9.6%)				95.1 / 134.7 (-17.3% / 17.3%)							
Unpaid Capital				Year Expires		No. (m)		\$m		Avg price		% ord			
30-Jun-16						0.0		0.0		0.00		0%			
30-Jun-17						0.0		0.0		0.00		0%			
30-Jun-18						114.2		17.1		0.150		31%			
30-Jun-19						0.0		0.0		0.000		0%			
30-Jun-20						24.5		10.6		0.431		7%			
TOTAL						138.7		27.7		0.200		37%			
Share Price Valuation (NAV)				Risked Est. A\$m				Est. A\$/share							
90% Namdini 9.5Mtpa (pre-tax NAV at disc. rate of 12%)				894.5				0.96							
Exploration upside, other assets				60.0				0.06							
Forwards				0.0				0.00							
Corporate Overheads				-42.6				-0.05							
Net Cash (Debt)				13.3				0.01							
Tax (NPV future liability)				-156.8				-0.17							
Options, Other Equity & Listed Investments				10.7				0.01							
Hedging				0.0				0.00							
Total				779.1				0.84							
Last updated: 24/05/2018															

NAMDINI GOLD PROJECT, GHANA

LARGE-SCALE, LONG-LIFE, EXPLORATION UPSIDE

Located in the northern parts of Ghana, West Africa

Location



Source: CDV

The northern parts of Ghana are considered highly prospective but are considered under explored when compared to Southern Ghana

Namdini has good local infrastructure with grid power (hydro) located ~30km from the project, year-round water from the White Volta River (only 7kms away) and within 25kms of sealed national highway

Project also well service by the nearby town of Bolgatanga

Namdini has a granted ML – 15 years renewable

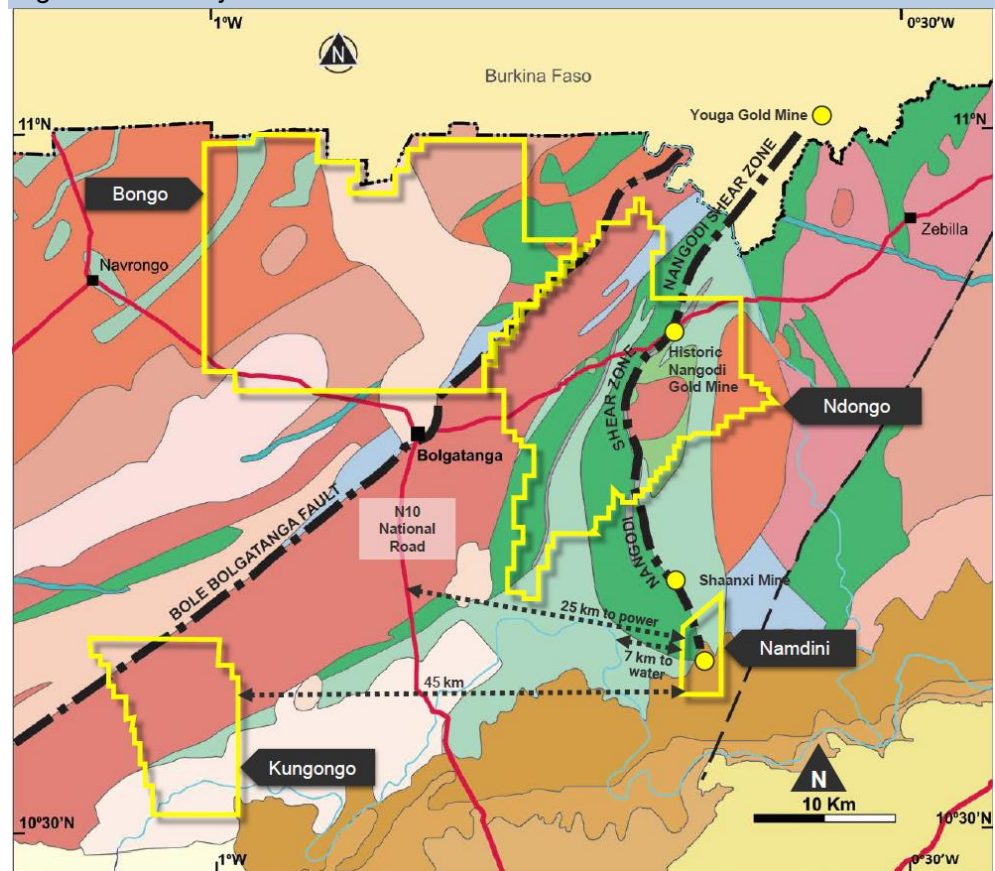
The Namdini project area is located in the northern parts of Ghana, West Africa. In mid-July 2017, CDV, through its 100%-owned Ghanaian subsidiary (Cardinal Mining Services) was assigned a large-scale mining licence (ML) at Namdini. The granted ML is larger than the original Namdini EL and as well as covering Namdini gold deposit, spans more of the mineralised trend (major and parallel structures).

Namdini is located within a Paleoproterozoic (Birimian-aged) Greenstone Belt comprising metavolcanics, granitoids, volcanoclastics and metasediments located to the east of a major regional shear zone (~30km NS), with associated faults and to the east of the Nangodi Fold Belt.

The Namdini deposit is a structurally controlled orogenic gold deposit with the gold not constrained to any discrete mineralised shear zone(s), but largely disseminated throughout a wide zone of altered metavolcanics, granitoids, diorite and metasediments.

The current Namdini resource estimate is **193Mt grading 1.1g/t Au for 7.0Moz** (at a 0.5g/t Au lower cut). Importantly, ~93% of resources are Indicated (180Mt grading 1.13g/t Au for 6.5Moz), with the higher category tonnes from surface to ~400m vertical depths.

Fig. 1: Project Tenement Location - Ghana



Source: Cardinal Resources Limited

SITE VISIT HIGHLIGHTS EXPLORATION UPSIDE

The Ndongo project area is currently the main focus for regional exploration with numerous prospects including Zupeliga, Zug, Dusi, McGuiness, Granite Dome (McGuiness South), Nangodi (historical mine) and Nangodi East being advanced. The project contains a large amount of artisanal workings (active and historical) which is an encouraging sign and highlights gold endowment.

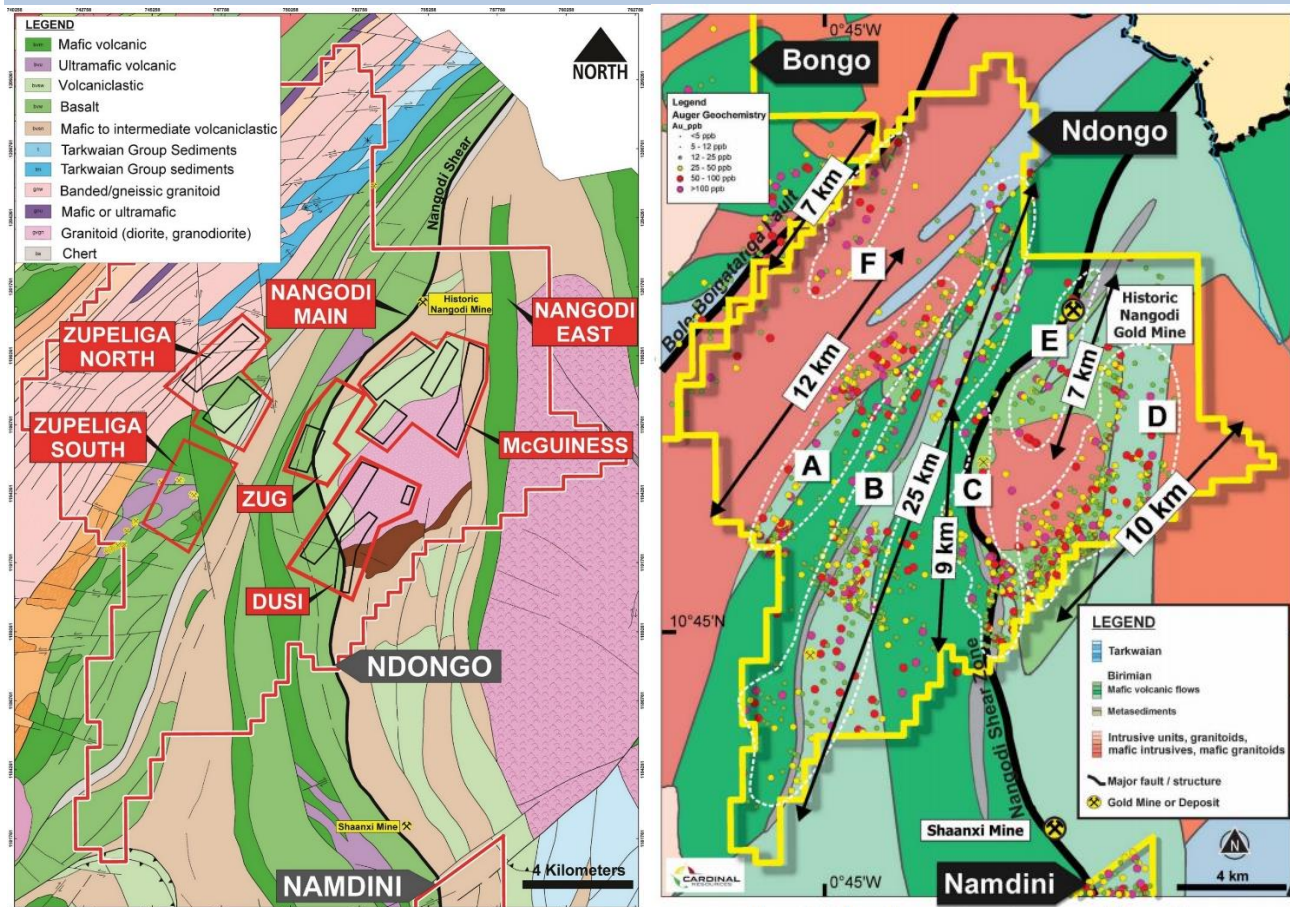
The Ndongo project area is currently the main focus for regional exploration with numerous prospects being advanced

Fig. 2: Ndongo Project- Key Prospects

Project	Prospect	Artisanals workings (active/present)	Mineralisation geology	Structural setting	Soil sampling	Drilling
Ndongo	Zupeliga North	Limited	Quartz vein hosted in Meta-Volcanics (Basaltic)	Close proximity to the Nangodi shear. With east-west splays coming off the shear. Locally complex	Yes	Underway
Ndongo	Zupeliga South	Yes	Quartz vein hosted in Meta-Volcanics (Basaltic)	Close proximity to the Nangodi shear	Yes	Underway
Ndongo	Zug	Yes	Volcaniclastic/Basalt	Covers the Nangodi shear	Limited	Underway
Ndongo	Dusi	Yes	Granite intrusion/ Basalt	Covers the Nangodi shear and contact zone between a granite intrusive and country rock	Limited	Pending
Ndongo	McGuiness	Yes	Granite intrusion	Contact zone between a granite intrusive and country rock	Limited	Pending
Ndongo	Granite Dome (McGuiness South)	Extensive	Granite intrusion	Internal faulting within the granite	No	Pending
Ndongo	Nangodi (main)	Historical mine	Basalt/Volcaniclastic	Covers the Nangodi shear	Limited	Pending
Ndongo	Nangodi East	Yes	Volcaniclastic	Possibly influenced by granitoid intrusion to the East	No	Underway

Source: Hartleys Research

Fig. 3: Ndongo Project Location- Prospects (LHS) and Geochem Image (RHS)



Source: Cardinal Resources Limited

CDV currently has 7 drill rigs active across its regional prospects and Namdini

The Nangodi historical mine (1936-1942) produced 18.6koz at ~24g/t with a shaft down to 300m vertical is one of the targets CDV plans to drill-test. Although speculative, if CDV was to make a discovery within the Ndongo project it could be within trucking distance to the central processing hub at Namdini, providing meaningful impact on projects economics.

CDV currently has 7 drill rigs active across its Namdini and Ndongo projects.

Fig. 4: Ndongo Prospects – Visit Images



McGuiness and McGuiness South (granite dome)



Zupeliga South (artisanal workings and active CDV drilling)



Nangodi (old shaft, workings to ~300m depth) – drilling anticipated soon

Source: Hartleys Research

CDV now plans to release an updated PEA, which is expected to incorporate a new mining inventory from the resource update and introduce a larger production scenario

PEA – HIGH GOLD PRODUCTION, LOW COST

The recently completed Preliminary Economic Assessment (PEA) or Scoping Study for the Namdini Gold Project highlighted a range of production scenarios (4.5Mtpa, 7.0Mtpa and 9.5Mtpa), all of which appear financially sound, and are expected to translate to high annual gold production at low operating costs (AISC) over long mine lives. The preferred scale of the development is expected to be selected as development studies progress, with an updated PEA now expected to be released in early Q3 CY18. The Fig.5 summarises the key outcomes.

Fig. 5: Namdini – PEA- Key Outcomes

Assumptions		Process: Crush, Mill, Float, Regrind, CIL		
		Units	4.5Mtpa	7.0Mtpa
Mining Method	Type	Open Pit	Open Pit	Open Pit
Resource	Mt	204.7Mt @ 1.1g/t Au for 7.4Moz	204.7Mt @ 1.1g/t Au for 7.4Moz	204.7Mt @ 1.1g/t Au for 7.4Moz
Mining Inventory	Mt	113Mt @ 1.1g/t Au for 4.1Moz	113Mt @ 1.1g/t Au for 4.1Moz	113Mt @ 1.1g/t Au for 4.1Moz
LOM Strip Ratio	W:O	1.2:1	1.2:1	1.2:1
Head Grade	g/t Au	1.13	1.13	1.13
Mine Scale	Mtpa	4.5	7.0	9.5
Mine Life	Years	27	19	14
Total Recovery	%	86%	86%	86%
Production -100%	Kozpa	159	211	333
Production -90%	Kozpa	143	190	300
AISC	US/oz	794	736	701
Capex pre-prod	US\$m	275	349	426
LOM sus capex	US\$m	172	160	154
CDV Pre-Tax NPV @ 5%	US\$m	706	913	1036
CDV Post-Tax NPV @ 5%	US\$m	445	574	649
Pre-Tax IRR	%	42	54	62
Post-Tax IRR	%	31	39	44
Project pay-back	Years	4.0	3.5	3.3

Source: Cardinal Resources Limited

The current resource provides total resources of 193Mt grading 1.1g/t Au for 7.0Moz (at a 0.5g/t Au lower cut), with 93% of resources or 6.5Moz now Indicated

Construction costs are largely in-line of expectations, with a phased development seen as a potential outcome to reduce upfront capex. As anticipated, the development is based around the mining of a large-scale, single open pit operation, which has a better than we anticipated LOM strip ratio of 1.2:1 (W:O). Namdini remains open at depth and along strike.

The current Namdini resource estimate of **7.0Moz** (at a 0.5g/t Au lower cut), has ~93% of resources Indicated (180Mt grading 1.13g/t Au for 6.5Moz). The resource grade is in-line of the recent PEA mining inventory of 1.13g/t Au (for 4.1Moz).

The mining inventory is expected to increase significantly and we see potential for a reserve of ~5Moz, highlighting strong upside for the update PEA (early Q3 CY18). Further enhancements includes the optimisation of recoveries. CDV is currently working on the regrind phase of the metallurgy test work, with current recoveries of 86% expected to improve slightly as part of trade-off study work.

The central part of the deposit may also provide a higher grade “starter pit” which would largely be hosted within the metavolcanic and granite units. This starter area could have a grade profile of +1.4g/t Au and provide a very low strip ratio of ~0.9:1 (W:O) for the initial open pit. The early processing of this ore could increase capital payback for a larger scale operation.

The potential starter pit is expected to provide higher grade ores at a low strip ratio

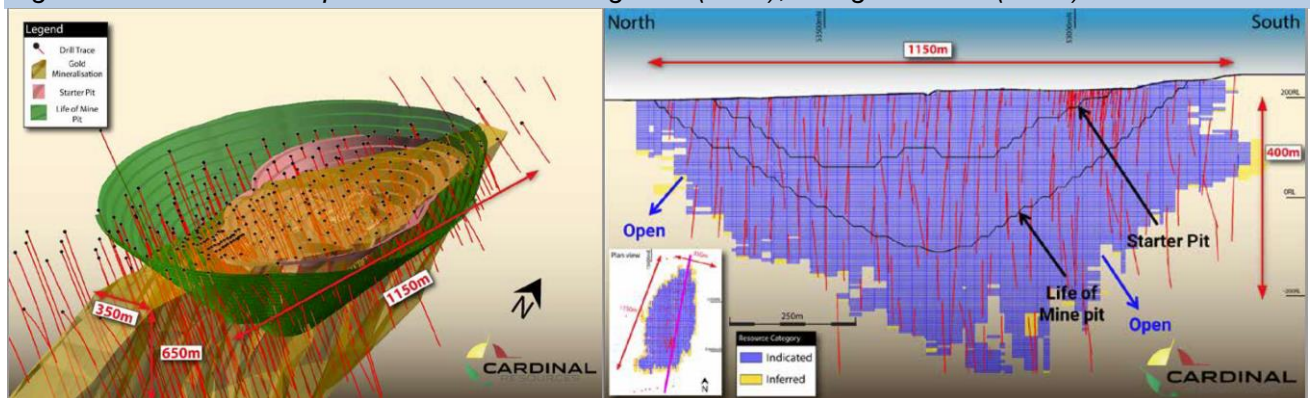
Early processing of ore could increase capital payback for a larger scale operation

Fig. 6: Namdini Resource– 5 March 2018

Indicated			
Tonnes (Mt)	Grade (g/t Au)	Metal (Moz Au)	Cut-off (g/t Au)
240	0.9	7.2	0.3
210	1.0	6.9	0.4
180	1.1	6.5	0.5
152	1.2	6.0	0.6
128	1.3	5.5	0.7
107	1.4	5.0	0.8
Inferred			
Tonnes (Mt)	Grade (g/t Au)	Metal (Moz Au)	Cut-off (g/t Au)
18	1.0	0.6	0.3
15	1.1	0.6	0.4
13	1.2	0.5	0.5
11	1.4	0.5	0.6
9	1.5	0.5	0.7
8	1.6	0.4	0.8
Total			
Tonnes (Mt)	Grade (g/t Au)	Metal (Moz Au)	Cut-off (g/t Au)
258	0.9	7.8	0.3
225	1.0	7.5	0.4
193	1.1	7.0	0.5
163	1.2	6.5	0.6
137	1.4	6.0	0.7
115	1.5	5.4	0.8

Source: Cardinal Resources Limited

Fig. 7: Namdini – Perspective View Looking NW (LHS); Long Section (RHS)



Source: Cardinal Resources Limited

VALUATION AND PRICE TARGET

METHODOLOGY – MINOR UPDATE

Our CDV valuation and price target are largely unchanged

The Company's current cash position provides funding for ongoing exploration

Our latest CDV spot NAV is A\$1.00/s

Even if development studies are fast tracked, first production would be at least 3 years away, we assume first production in 2021

Our 12-month price target remains unchanged at \$1.00/s

Our CDV valuation (sum of parts) and price target have been updated by the recent PEA/Scoping Study and latest resource estimate. Metallurgical testwork is ongoing with a full detailed report on the optimised metallurgy expected to be released as part of ongoing studies. Interim metallurgical updates provide a good level of comfort that total recoveries of 86% can be achieved, with the processing flowsheet now determined and being optimised.

We now model a potential ~4.5-5Moz mining inventory mined by open pit operation, using estimated opex and capex from reference to the PEA. We stress our model inputs remain subject to change (as scale is yet to be determined) and we assume the project can be successfully funded into production. We use a discount rate of 12% during developments with the rate to be lowered upon reaching production. Our model is fully funded (60:40 Debt to Equity ratio) and fully diluted.

Fig. 8: Hartleys CDV NAV

Share Price Valuation (NAV)	Risked Est. A\$M	Est. A\$/share
90% Namdini 9.5Mtpa (pre-tax NAV at disc. rate of 12%)	894.5	0.96
Exploration upside, other assets	60.0	0.06
Forwards	0.0	0.00
Corporate Overheads	-42.6	-0.05
Net Cash (Debt)	13.3	0.01
Tax (NPV future liability)	-156.8	-0.17
Options, Other Equity & Listed Investments	10.7	0.01
Hedging	0.0	0.00
Total	779.1	0.84

Source: Hartleys Estimate

Our 12-month price target is largely unchanged at A\$1.00/s, derived from both a discounted cashflow analysis of a successful gold operation at Namdini, cash and future cash value and our perception of exploration value in the search of other gold deposits.

Fig. 9: Hartleys CDV Price Target

Price Target Methodology	Weighting	24/05/2018	12 Month
90% Namdini (NPV @12) - Open Pit 9.5Mtpa 15 yr- Base	40%	\$0.84	\$0.98
90% Namdini (NPV @12) - Open Pit 9.5Mtpa 15 yr- Spot	25%	\$1.00	\$1.17
90% Namdini 4.5Mtpa (post-tax NAV at disc. rate of 12%) - Low	5%	\$0.47	\$0.55
90% Namdini 7.0Mtpa (post-tax NAV at disc. rate of 12%) - Mid	5%	\$0.78	\$0.91
Base Case (9.5Mtpa) using 5% discount rate	15%	\$1.32	\$1.43
Exploration value no development	5%	\$0.40	\$0.48
Current Cash Backing	5%	\$0.04	\$0.04
Risk weighted composite		\$0.87	
12 Months Price Target		\$1.00	
Shareprice - Last		\$0.490	
12 mth total return (% to 12mth target + dividend)		104%	

Source: Hartleys Estimates

RISKS

Key risks for Cardinal include metallurgy, improving resources which can be converted to reserves, development studies and funding (both for ongoing exploration activities and any potential future development).

Fig. 10: Key assumptions and risks for valuation

Assumption	Risk of not realising assumption	Downside risk to share price if assumption is incorrect	Comment
Project ownership can be maintained	Low	Meaningful	We assume CDV project tenure agreements are enforceable and the Company will retain full mineral ownership and exploitation rights. We assume NSR payments will be made to Savannah. The granted ML has been assigned to CDV.
Sovereign risk	Low	Meaningful	We assume Ghana remains a stable country with favourable laws for foreign investment and the repatriation of potential future earnings.
Model parameters for our preliminary CDV valuation and price target	Med	Meaningful	We have made a number of assumptions in our CDV valuation, based on information largely supplied in the PEA. CDV has no production history. Any changes to our assumptions have both upside and downside risks.
Metallurgy outcome ultimately viable	Med	Extreme	The interim metallurgical testwork provided improved recoveries, which are now above 86% from the processing flowsheet of crush-grind-float-regrind-CIL (preferred route at this stage). Further testwork is underway.
Favourable commodity prices	Low	Meaningful	CDV remains sensitive to changes in commodity prices (particularly gold), exchange rates and market sentiment. Though with no current operations, direct impact from commodity prices is limited. With exploration tenure offshore, US\$, AUD and local Ghanaian Cedi exchange rates are a risk.
Upside from exploration	Med	Moderate	CDV is currently funded for planned exploration activities (~A\$13M in estimated cash). The Company also has in the money options which could provide additional future funding. We consider the Company's ground to be highly prospective and under-explored, and a significant gold discovery has already been made at Namdini. However, the lack of exploration success would have a negative impact on the Company.

Conclusion

At this stage we consider the assumptions have a low to medium risk of not being achieved.

Source: Hartleys Research

COMPANY INFOGRAPHIC

Fig. 11: Cardinal Resources Ltd (CDV) Infographic

CARDINAL RESOURCES LTD (CDV)

LOCATION



COMMODITY



RESERVES/RESOURCES

Indicated			
Tonnes (Mt)	Grade (g/t Au)	Metal (Moz Au)	Cut-off (g/t Au)
240	0.9	7.2	0.3
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11	1.4	0.5	0.6
9	1.5	0.5	0.7
8	1.6	0.4	0.8

PRODUCTION TARGET


PRODUCTION
 9.5Mtpa
 +330kozpa
 100% basis


CASH COSTS
 AISC
 US\$701/oz Au

MINE LIFE



+14 Years

KEY METRICS

*NPV12 (pre-tax) A\$895M
 *CDV NAV A\$779M

**Hartleys estimates, subject to change
 Namdini project CDV 90% interest 9.5Mtpa*



HARTLEYS CORPORATE DIRECTORY

Research

Trent Barnett	Head of Research	+61 8 9268 3052
Mike Millikan	Resources Analyst	+61 8 9268 2805
John Macdonald	Resources Analyst	+61 8 9268 3020
Paul Howard	Resources Analyst	+61 8 9268 3045
Aiden Bradley	Research Analyst	+61 8 9268 2876
Oliver Stevens	Research Analyst	+61 8 9268 2879
Michael Scantlebury	Junior Analyst	+61 8 9268 2837
Janine Bell	Research Assistant	+61 8 9268 2831

Corporate Finance

Dale Bryan	Director & Head of Corp Fin.	+61 8 9268 2829
Richard Simpson	Director	+61 8 9268 2824
Ben Crossing	Director	+61 8 9268 3047
Ben Wale	Director	+61 8 9268 3055
Stephen Kite	Director	+61 8 9268 3050
Scott Weir	Director	+61 8 9268 2821
Scott Stephens	Associate Director	+61 8 9268 2819
Rhys Simpson	Associate Director	+61 8 9268 2851

Registered Office

Level 6, 141 St Georges Tce Postal Address:

Perth WA 6000	GPO Box 2777
Australia	Perth WA 6001
PH: +61 8 9268 2888	FX: +61 8 9268 2800
www.hartleys.com.au	info@hartleys.com.au

Note: personal email addresses of company employees are structured in the following manner: firstname.lastname@hartleys.com.au

Hartleys Recommendation Categories

Buy	Share price appreciation anticipated.
Accumulate	Share price appreciation anticipated but the risk/reward is not as attractive as a "Buy". Alternatively, for the share price to rise it may be contingent on the outcome of an uncertain or distant event. Analyst will often indicate a price level at which it may become a "Buy".
Neutral	Take no action. Upside & downside risk/reward is evenly balanced.
Reduce / Take profits	It is anticipated to be unlikely that there will be gains over the investment time horizon but there is a possibility of some price weakness over that period.
Sell	Significant price depreciation anticipated.
No Rating	No recommendation.
Speculative Buy	Share price could be volatile. While it is anticipated that, on a risk/reward basis, an investment is attractive, there is at least one identifiable risk that has a meaningful possibility of occurring, which, if it did occur, could lead to significant share price reduction. Consequently, the investment is considered high risk.

Institutional Sales

Carrick Ryan	+61 8 9268 2864
Justin Stewart	+61 8 9268 3062
Simon van den Berg	+61 8 9268 2867
Digby Gilmour	+61 8 9268 2814
Jayne Walsh	+61 8 9268 2828
Veronika Tkacova	+61 8 9268 3053

Wealth Management

Nicola Bond	+61 8 9268 2840
Bradley Booth	+61 8 9268 2873
Adrian Brant	+61 8 9268 3065
Nathan Bray	+61 8 9268 2874
Sven Burrell	+61 8 9268 2847
Simon Casey	+61 8 9268 2875
Tony Chien	+61 8 9268 2850
Tim Cottee	+61 8 9268 3064
David Cross	+61 8 9268 2860
Nicholas Draper	+61 8 9268 2883
John Featherby	+61 8 9268 2811
Ben Fleay	+61 8 9268 2844
James Gatti	+61 8 9268 3025
John Goodlad	+61 8 9268 2890
Andrew Gribble	+61 8 9268 2842
David Hainsworth	+61 8 9268 3040
Murray Jacob	+61 8 9268 2892
Gavin Lehmann	+61 8 9268 2895
Shane Lehmann	+61 8 9268 2897
Steven Loxley	+61 8 9268 2857
Andrew Macnaughtan	+61 8 9268 2898
Scott Metcalf	+61 8 9268 2807
David Michael	+61 8 9268 2835
Jamie Moullin	+61 8 9268 2856
Chris Munro	+61 8 9268 2858
Michael Munro	+61 8 9268 2820
Ian Parker	+61 8 9268 2810
Matthew Parker	+61 8 9268 2826
Charlie Ransom	+61 8 9268 2868
Mark Sandford	+61 8 9268 3066
David Smyth	+61 8 9268 2839
Greg Soudure	+61 8 9268 2834
Sonya Soudure	+61 8 9268 2865
Dirk Vanderstruyf	+61 8 9268 2855
Samuel Williams	+61 8 9268 3041

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Hartleys has assisted in the completion of capital raisings in the past 12 months for Cardinal Resources Limited for which it has earned fees. An analyst recently visited site at the expense of CDV, with all associated costs covered by CDV.

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