ARGONAUT
The Natural Choice in Resources

SPEC BUY

Current Price	$0.71
Valuation	$1.95

Code:	**CTM**
Sector:	**Materials**

ESG Ratings:

	Negative/	Neutral/	Positive/
	Limited	Acceptable	Detailed
Commitment			
Industry			
Reporting			

* All figures in AUD unless stated otherwise

Shares on Issue (M):	**427**
- fully diluted (M)	**439**
Market Cap ($M):	**303**
- fully diluted ($M)	**312**
Net cash ($M):	**23**
Enterprise value ($M):	269
EV/Resource Ni Tonnes	A$368/t
52 wk High/Low (ps):	**$0.82** **$1.53**
12m av. daily vol. (Mshs):	**0.8**

Key Metrics:

	FY27e	FY28e	FY29e
P/E (x)	472.7	4.0	3.3
EV/EBITDA (x)	7.2	5.1	3.8

Financials:

	FY27e	FY28e	FY29e
Revenue ($M)	86	483	563
EBIT ($M)	23	222	262
NPAT (A$M)	1	178	214
Net assets ($M)	318	604	719
Op CF ($M)	5	186	210

Per share data:

	FY27e	FY28e	FY29e
EPS (c)	0.2	17.7	21.3
Dividend (cps)	0.0	0.0	0.0
Yield (%)	-	-	-
CF/Share (cps)	1.3	43.5	49.2
Prod (kt Ni)	3,222	18,049	21,060

Share Price Graph and trading volumes (msh)
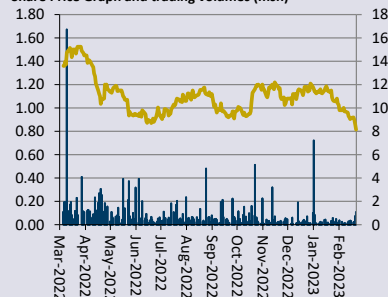
Please refer to ESG comments from page 21 and important disclosures from page 23

Centaurus Metals (CTM)

A Cat Amongst the Pigeons

Analyst | George Ross

Quick Read

In this report we complete a deep comparative analysis of Centaurus Metals' Jaguar Nickel Sulphide Project with several high-profile advanced stage Pressure Oxidation developments held by ASX listed entities. Our evaluation includes side-by-side comparisons based on Gross, Recoverable, Payable and Profit value from Resources and development inventories. We also compare development scenarios for peers, along with projected production profiles and profitability. Our analysis suggests CTM's shares are materially undervalued versus peers.

Key Points

- Comparative modelling suggests Jaguar financial and technical outcomes are highly competitive with other proposed pressure oxidation developments.

- The high value nature of Jaguar ore ensures a strong Margin Value return, insulating the project against poor economic conditions.

- On an EV/EBITDA & EV/NPAT basis CTM is trading at a fraction of peers.

- We have updated our detailed Jaguar valuation model to an open pit only (no underground) operation, simplifying execution complexity.

Table 1: Summary of CTM and comparative peers.

Owner Name	Centaurus Metals	Chalice Mining		BHP Group	DeGrey Mining
ASX Company Code	CTM	CHN		BHP	DEG
Current Share Price (A$)	0.71	7.13		42.82	1.30
Development Stage	Scoping, DFS 2023	Advanced Exploration		Construction	Pre-Feasibility
Estimated Build Start /FID Date	CY2024	>CY2027		CY2023	CY2025
Dominant Payable Metals	Ni-Cu-Co-Zn	PGM-Ni-Cu-Co		Ni-Cu	Au
Resource Gross Metal Value (US$B)	19.0	49.4	33.1	38.2	12.8
Resource Recoverable Value (US$B)	14.0	29.3	21.3	25.7	11.9
Inventory Payable Value (US$B)	7.2	18.3	9.3	15.9	12.3
Inventory Margin Value (US$B)	4.0	7.4	3.0	7.8	6.8
Development Scenario	2.7Mtpa POX Sulph	20Mtpa POX MHP	5Mtpa HG POX Sulph	13.5Mtpa POX MHP	10Mtpa POX Doré
Modelled Operational Life	16	21	19	21	15
Unoptimized Build Date NPV(7) A$M	1627	2494	1237	2088	2637
Equiv Value Per Share (A$)	3.73	6.45	3.20	0.42	1.71
Unoptimized Present Day NPV(7) A$M	1403	1737	841	2088	2126
Equiv Value Per Share (A$)	3.22	4.49	2.18	0.42	1.38
Avg EBITDA (A$ M)	342	589	305	555	668
Avg Annual NPAT (A$ M) (First 10Y)	269	375	193	346	435
Owner EV/EBITDA Trading Multiple	0.8 x	4.4 x	8.5 x	-	2.8 x
Owner EV/NPAT Trading Multiple	1.1 x	7 x	13.5 x	-	4.3 x
CTM SP @ Peer EV/EBITDA Multiple (A$)	0.71	2.96	5.67	-	1.88
CTM SP @ Peer EV/NPAT Multiple (A$)	0.71	4.62	8.92	-	2.86

Source: Argonaut

Recommendation

We maintain our Speculative Buy and increase our valuation to A$1.95 per share (previously $1.69).

Centaurus Metals (CTM)

Equities Research
Analyst: George Ross

Recommendation		Speculative Buy
Current Price		$0.71
Valuation		$1.95

Sector		Metals & Mining
Issued Capital (Mshs)		427
Market Cap (M)		$ 303
		Monday, 29 May 2023

Profit & loss (A$M) 30 June	Unit	2026E	2027E	2028E	2029E
Sales Revenue	A$M	0	86	483	563
+ Other income/forwards	A$M	0	0	0	0
- Operating costs	A$M	-4	-29	-144	-172
- Royalties	A$M	0	-4	-22	-26
- Corporate & administration	A$M	-16	-16	-16	-16
Total Costs	A$M	**-20**	**-49**	**-182**	**-214**
EBITDA	A$M	-20	38	300	350
- margin		0%	44%	62%	62%
- D&A	A$M	0	-14	-78	-88
EBIT	A$M	-20	23	222	262
+ Finance Income/Expense	A$M	-9	-16	-11	-5
PBT	A$M	-29	7	212	257
- Tax expense	A$M	0	-7	-41	-48
- Impairments and other	A$M	0	0	0	0
NPAT	A$M	**-29**	**0**	**171**	**209**

Cash flow (A$M)	Unit	2026E	2027E	2028E	2029E
+ Revenue	A$M	0	86	483	563
- Cash costs	A$M	-22	-64	-260	-305
-Tax payments		0	-2	-33	-48
+ Interest & other	A$M	-9	-16	-11	-5
Operating activities	A$M	**-31**	**4**	**180**	**205**
- Property, plant, mine devel.	A$M	-488	-30	-6	-42
- Exploration	A$M	-2	-2	-2	-2
- Feasibility Studies		0	0	0	0
Investment activities	A$M	**-490**	**-32**	**-8**	**-44**
+ Borrowings	A$M	257	-57	-114	-114
- Dividends	A$M	0	0	0	0
+ Equity	A$M	0	0	0	0
Financing activities	A$M	**257**	**-57**	**-114**	**-114**
Cash change	A$M	**-264**	**-85**	**57**	**47**

Balance sheet (A$M)	Unit	2026E	2027E	2028E	2029E
Cash	A$M	98	13	71	118
Other Current Assets	A$M	0	0	0	0
Total current assets	A$M	**98**	**13**	**71**	**118**
Property, plant & equip.	A$M	488	504	432	386
Investments/other	A$M	0	0	0	0
Total non-curr. assets	A$M	**488**	**504**	**432**	**386**
Total assets	A$M	**586**	**517**	**502**	**503**
Trade payables	A$M	64	11	38	41
Short term borrowings	A$M	57	114	114	57
Other	A$M	64	18	39	41
Total curr. liabilities	A$M	**185**	**143**	**191**	**140**
Long term borrowings	A$M	286	171	57	0
Other	A$M	0	0	0	0
Total non-curr. liabil.	A$M	**286**	**171**	**57**	**0**
Total liabilities	A$M	**471**	**314**	**248**	**140**
Net assets	A$M	**115**	**203**	**254**	**364**

Resource			Mt	Ni %	Ni Kt
Jaguar South (II)			34.6	0.92	317
Jaguar Central (II)			12.5	0.81	100
Jaguar North (II)			3.2	1.15	37
Jaguar Central North(II)			14.2	0.62	88
Jaguar North East (I)			16.8	0.75	126
Jaguar West (II)			8.7	0.72	63
Onca Preta (II)			14.2	1.23	174
Onca Rosa (I)			1.9	0.98	19
Tigre (II)			2.00	0.77	15
Total Global MRE			**108.1**	**0.87**	**939**

Financial ratios	2027E	2028E	2029E	2030E
GCFPS Diluted (A¢)	1	42	48	48
CFR (X)	70.6	1.7	1.5	1.5
EPS Diluted (A¢)	0	17	21	22
PER (X)	1670.4	4.2	3.4	3.3
DPS ($)	0%	0%	0%	0%
Yield (%)	0%	0%	0%	0%
Interest cover (X)	1	21	52	745
ROCE (%)	6%	71%	72%	55%
ROE (%)	4%	83%	71%	55%
Avg Gearing (%)	170%	97%	33%	2%

Jaguar Operations summary	2027E	2028E	2029E	2030E
Ore processed (Mt)	0.4	2.3	2.7	2.7
Ni Head grade after ore sorting (%)	1.10	1.04	1.00	0.77
Met. Recovery (%)	78%	78%	78%	78%
Share of Ni in Final Product (t)	3222	18049	21060	21060
Cost per milled tonne (US$/t)	74	67	68	70
Cash costs pre royalty (US$/t)	8891	8595	8757	8935
C1 Costs (US$/lb)	4.3	3.9	4.0	3.9
AISC (US$/lb)	4.6	4.5	4.8	4.4

Price assumptions	2027E	2028E	2029E	2030E
AUDUSD	0.700	0.700	0.700	0.700
Nickel (US$/t)	17500	17500	17500	17500
Nickel (US$/lb)	7.94	7.94	7.94	7.94
Nickel (A$/t)	25000	25000	25000	25000

Company Valuation summary	A$M	A$/sh
Jaguar Project NPV9 AUD	1258	2.94
Risk Discount (Study Maturity 25%)	-314	-0.74
Jambreiro Project	40	0.09
Exploration, all sites	195	0.46
Corporate overheads	-158	-0.37
Cash & Equivalents	23	0.05
Debt	0	0.00
Option/equity dilution	-209	-0.49
Total	834	1.95

^ *Future Option/Equity Dilution is calculated using an NPV formula that considers value of dilutionary shares/options in future periods against the current project valuation*

Directors, management	
Didier Murcia	Chairman
Darren Gordon	Managing Director / CEO
Bruno Scarpelli	Executive Director
Mark Hancock	Non-Executive Director
Chris Banasik	Non-Executive Director
Natalia Streltsova	Non-Executive Director
Roger Fitzhardinge	GM - Exploration & Growth
Wayne Foote	GM - Operations
John Westdorp	Chief Financial Officer

Top shareholders	M shs	%
McCusker Holdings Pty Ltd	56	13
Sprott Inc.	39	9
Regal	27	6
Harmanis	22	5
Dundee Corporation	23	5
Management	17	4

Shares	2024E	2025E	2027E	2029E
New shs issued/exerciseable	64	186	0	0
Average issue price	0.8	1.3	0.0	0.0
Ordinary shares - end	623	995	995	995
Diluted shares - end	629	995	995	995

Comparison Peers & Assumptions

Our project peers all consider the use of Pressure Oxidation technology for processing

Our three comparable project peers for CTM's Jaguar deposit are West Musgrave (BHP), Julimar (CHN) and Mallina (DEG). While the four projects contain a mixed bag of metals, all host a sulphide Resource of significant scale and all will most likely integrate Pressure Oxidation (POX) processing as part of their flow sheet. All three of the peers are located in Western Australia, whilst Jaguar is located in the Carajas, mining heartland of Brazil. We ascribe the majority of company value for each of CTM, CHN and DEG to their major projects. West Musgrave was recently acquired by BHP through takeover of Oz Minerals and accounts for only a small percentage of the groups overall market value and hence is largely excluded from our corporate level comps.

Peer Group Project Summaries

Jaguar - Centaurus Metals (CTM)

We model Jaguar as an open pit operation with 2.7 Mtpa mill, sulphide concentrator and POX

CTM's Jaguar nickel sulphide project is a base metals project located in the Carajas, Brazil. Mineralisation is characterised by a unique style of structurally controlled hydrothermal sulphide mineralisation similar to Cloncurry style IOCG copper deposits. Mineralisation is vertically continuous and consistent over multi-kilometre strike lengths. Jaguar's MRE is currently reported as 109Mt at 0.87% Ni, 0.07% Cu, 268ppm Co and 0.32% Zn. The MRE is predominantly reported within pit constrained by US$22,000/t Ni, US$44,092/t Co, US$9,065/t Cu and US$2,900/t Zn. Nickel sulphides are recoverable by flotation at an 80% recovery. Low grade mineralisation is amenable to ore sorting. In May 2021 CTM reported the 'Value-Add' Jaguar Scoping Study for development of the project as a 2.7Mtpa operation for production of ~21kt of nickel in sulphate plus by-products via sulphide concentration and pressure oxidation (POX). Full scheme pilot plant level comminution, flotation and hydrometallurgy testing has been completed for production of high purity chemical products. On the 23rd of May 2023 CTM reported the sulphate produced during the POX pilot test work achieved a 99.99% purity and with low deleterious elements, making it suitable for the premium Lithium-Ion battery market. Nickel sulphate will be the main source of revenue for Jaguar. Battery grade nickel sulphate currently sells at a premium of ~7% above LME metal pricing (107% payability).

Figure 1: Jaguar Project MRE block model with optimised Pits.

Jaguar's pits continue to grow
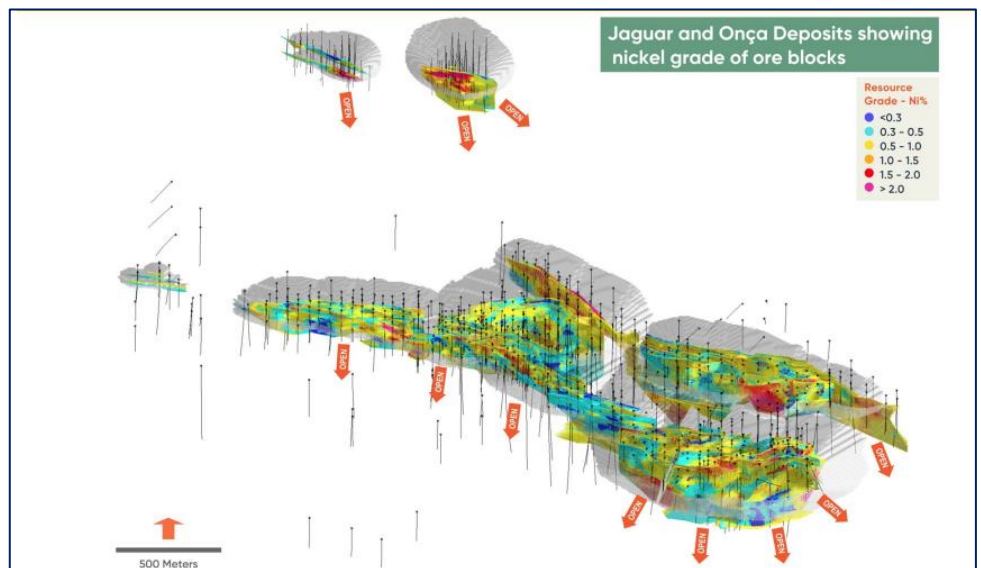
Source: CTM

The Jaguar Mining Lease Application (PAE) and Environmental Assessment (EIA/RIMA) were lodged in 2021. Acceptance of the EIA/RIMA will result in grant of a Preliminary License (LP) and allow application for an Installation License (LI) to enable mine construction. Grant of

the LI is expected prior to the end of CY2024. The project is located more than 30km away from indigenous groups and forestry preserves.

Our modelled Jaguar scenario assumes only an open pit operation (no underground) for production of nickel sulphate and other products via POX hydrometallurgical processing as proposed by CTM's scoping study.

Julimar - Chalice Mining (CHN)

Chalice Mining's Julimar Project includes the very large Gonneville Ni-Cu-PGE deposit

CHN's Julimar project is located 70km north-east of Perth, WA. The large Gonneville Ni-Cu-PGE orthomagmatic sulphide deposit is hosted within the Julimar intrusive complex. Sulphide mineralisation occurs in massive, matrix, stringer and disseminated styles. The 560Mt at 0.16% Ni, 0.09% Cu, 0.015% Co and 0.88g/t 3E(Pt+Pd+Au) is reported within an open pit (1:1.6 strip ratio) constrained by US$24,000/t Ni, US$10,500/t Cu, US$72,000/t Co, US$1,800/oz Pd, US$1,200/oz Pt and US$1,800/oz Au. Metallurgy to date has included scoping level comminution tests, >125 batch flotation tests and >25 locked cycle flotation tests. Argonaut has adopted metal recoveries published in the Gonneville MRE at headline and high-grade resources. While no Scoping Study has been released to date, CHN has guided it is pursuing a range of processing flowsheets. The most emphasis has been directed towards a flowsheet including sequential flotation of copper and nickel sulphide concentrates. The nickel concentrate will be further processed via POX for precipitation of a Ni-Co Mixed Hydroxide (MHP). Cu, PGE and Au precipitates generated from the POX process will be blended back into the copper concentrate for sale. Ni-Co MHP typically sells with a ~85% payability for both metals. The Gonneville deposit is located predominantly on private land adjacent to the Julimar State Forest. Environmental and Mine permitting are expected to proceed following feasibility studies.

Figure 2: Isometric view of the Gonneville deposit MRE (Julimar project) block model.

The Gonneville deposit MRE extends 1.9km in length and up to 800m depth
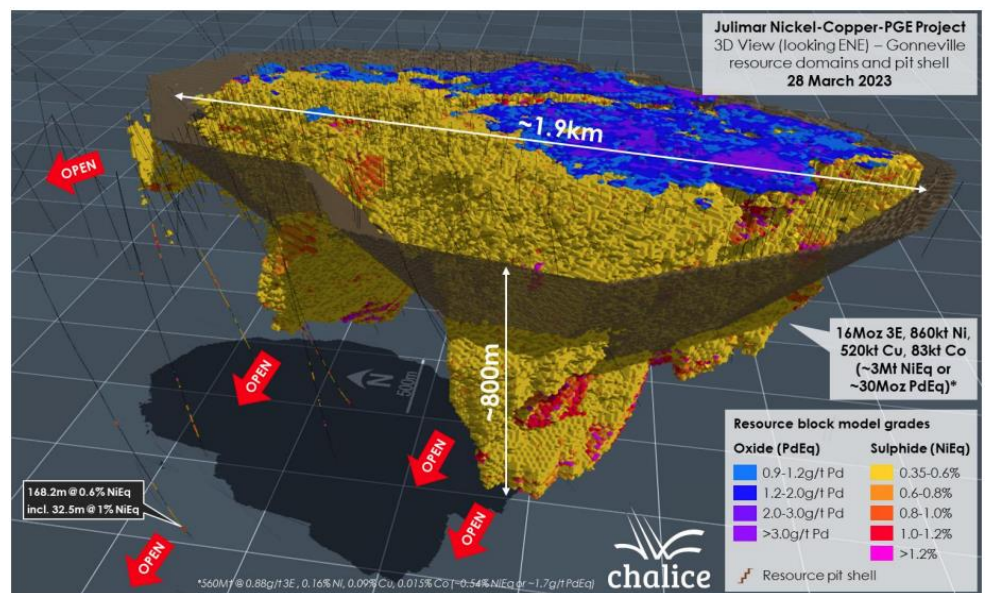
Source: CHN

We modelled several development options for Julimar and present two better performing scenarios for comparative analysis:

20Mtpa POX MHP – This scenario models Julimar as a bulk 20Mtpa mill throughput operation which processes ore tonnes at grades equivalent to headline global MRE grade. We have adopted CHN's proposed sequential flotation plus POX flowsheet for production of copper sulphide concentrate containing precious metals and nickel-cobalt MHP. For capital and operating cost estimates we use feasibility study and reportable numbers for comparable scale builds.

We model two potential Julimar development scenarios

5Mtpa HG POX Sulphate – Our second Julimar development scenario uses CHN's High-Grade MRE estimate as a basis for a 5Mtpa throughput operation. We model a selective high-grade operation treating a base load of 90Mt of ore. We assume that a single bulk sulphide concentrate would be processed for production of high value nickel sulphate and cobalt hydroxide battery chemicals. Copper would be recovered as cathode via electrowinning. Precious metals would be recovered as a high purity powder for refinement.

West Musgrave- BHP Group (BHP)

BHP's West Musgrave project is a large Ni-Cu Pressure Oxidation expected to begin construction this year

West Musgrave is located in the remote Musgrave Province of Western Australia and includes the Nebo and Babel nickel-copper deposits and the Succoth copper deposit. The deposits are classified as magmatic sulphides and contain copper, nickel and PGEs. Sulphide mineralisation is predominantly disseminated with minor massive and breccia textures. The Nebo-Babel total MRE is reported as 390Mt grading 0.3% Ni, 0.33% Cu, 0.06g/t Au, 0.85g/t Ag, 120ppm Co, 0.09g/t Pd, 0.08g/t Pt. The project's 270Mt Reserve is contained within a pit with a 1:2.8 strip ratio. Full Feasibility studies were completed by former owners Oz Minerals (OZL) and the project has moved to construction phase. We have adopted project level model parameters from the West Musgrave DFS and MHP Study. Following hydrometallurgical studies reported in November 2022, West Musgrave is expected to produce a copper sulphide concentrate and nickel-cobalt MHP generated from POX processing.

For our comparison we adopt published feasibility study assumptions for mining and processing.

Figure 3: Nebo-Babel block model and planned pits.

Source: OZL/BHP
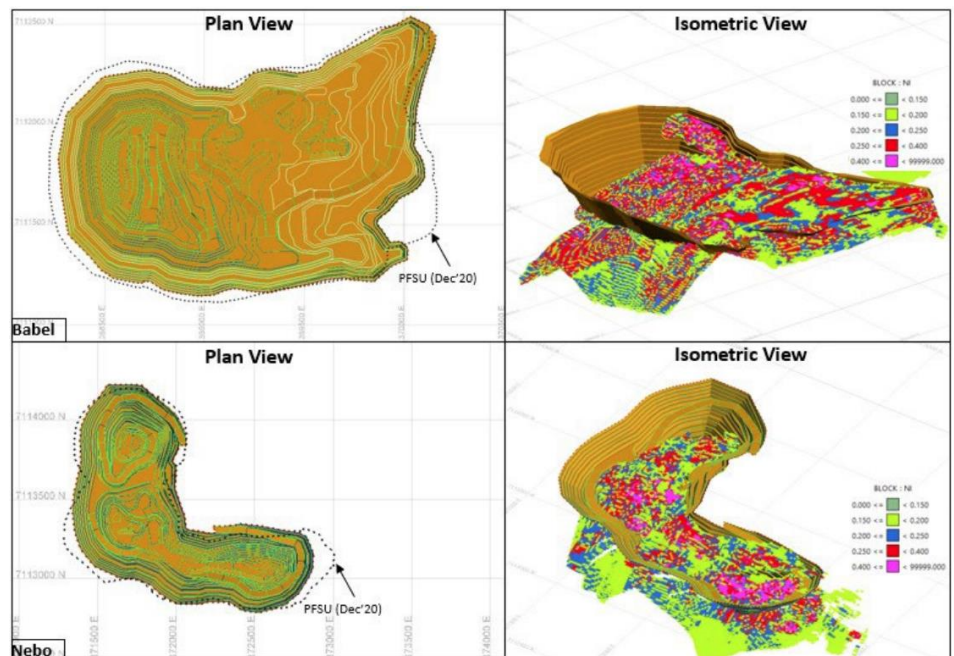
Mallina – DeGrey Mining (DEG)

We also model development of the Mallina Gold POX development

DeGrey's Mallina Gold Project is located in the Pilbara, WA, 85km south of Port Headland. The Project includes 251Mt of Resources grading an average 1.3g/t Au, the majority (213Mt) of which is located at the Hemi Mining Centre. Mineralisation is associated with pyrite mineralisation and will be treated via POX processing for ultimate recovery of gold bars. Comprehensive metallurgical test work has been completed at bench, bulk and pilot scale.

A DFS for the project is scheduled for mid-2023. Mining Lease applications and Environmental approvals are underway. Argonaut schedules beginning of construction in FY2025.

For our comparison we adopt published pre-feasibility study cost and technical parameters for mining and processing.

Figure 4: Hemi Mining Centre MRE Block model and open pit layout.

The Hemi mining centre contains most of Mallina's Resources
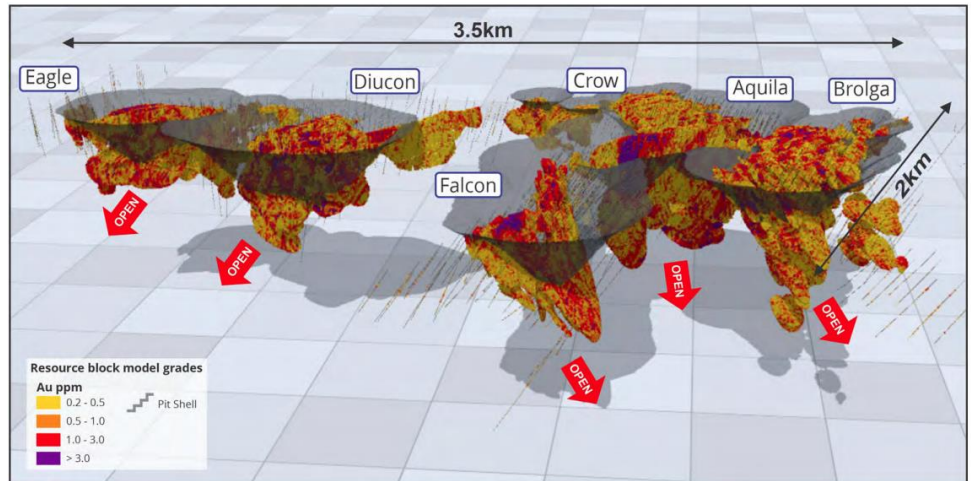
Source: DEG

General Financial Model Assumptions

Where possible our project level assumptions (grades, recoveries, costs etc) are based on specific company published information. In circumstances where information is not publicly available we have used information for analogous operations and in house knowledge. Our modelling uses a flat USD:AUD exchange rate of 0.70. We use a 7% discount rate for our base case NPV calculations. Assumed metal prices for our financial modelling are displayed below.

Our Base Case metal price assumptions are consistent with those used in other Argonaut financial modelling

Table 2: Metal price scenarios used for financial modelling. '3E PGM' represents an aggregate value for mixed Au+Pt+Pd specifically used in calculations for Julimar.

Metal	Pricing Scenarios		
	-20%	Base	+20%
Ni US$/t	14000	17500	21000
Cu US$/t	6400	8000	9600
Co US$/t	32000	40000	48000
Zn US$/t	2000	2500	3000
3E PGM US$/oz	1358	1698	2037
Au US$/oz	1440	1800	2160
Pt US$/oz	960	1200	1440
Pd US$/oz	1440	1800	2160

Source: Argonaut

Defining Classes of Value

In our analysis we discuss several types of comparative value applied on a per tonne of ore and deposit contained metal basis. Definition and derivation of these values are defined more extensively in the appendix to this report.

- Gross Value: Raw monetary value of in-situ ore stated in dollars derived by multiplying grade by metal price.

- Recoverable value: A dollar value representing the monetary value of metal which can be recovered from a rock through processing. Calculated by aggregation of grade x recovery x metal price for each contained metal.

- Payable Value: Represents revenues from Recoverable metal corrected for product payability. Derived by aggregating the dollar value of recoverable metal multiplied by payability percentage.

- Margin Value: Payable Value less Operating Costs. Margin Value represents how much money can be made per unit of ore.

Our four classes of value (Gross, Recoverable, Payable and Margin) represent different stages of value realisation

Figure 5: Demonstration of relationship between our value definitions.
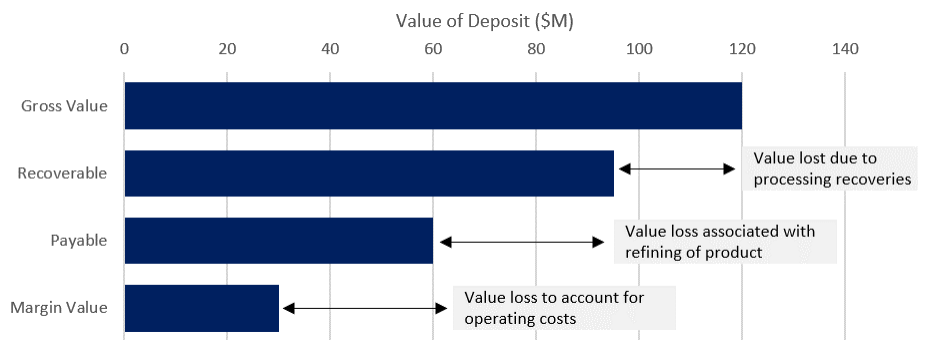
Source: Argonaut

Metal Equivalent Values

We purposefully avoid the use of equivalent metal values because of confusions which arise from their calculation and perception. Equivalent metal grade (eg NiEq) values represent the total value of metal contained within a rock as a single metal with an associated recovery. This causes confusion as the casual observer may interpret two NiEq values with the same grade from separate deposits as having comparable value. However, this is not the case. Table 3 presents an example of this issue. See the appendix for calculation method.

Metal equivalent values deceptively unhelpful in comparing project values

Table 3: Example of value variation of two deposits with the same 'NiEq' grade.

	Stated Resource	Contained NiEq Tonnes	Recovery	Recoverable Ni Eq Grade	Recoverable Metal	Recoverable Metal Value
Deposit A	20Mt at 1.0% NiEq	200kt	80%	0.8%	160kt	$280M
Deposit B	20Mt at 1.0% NiEq	200kt	50%	0.5%	100kt	$175M

Source: Argonaut
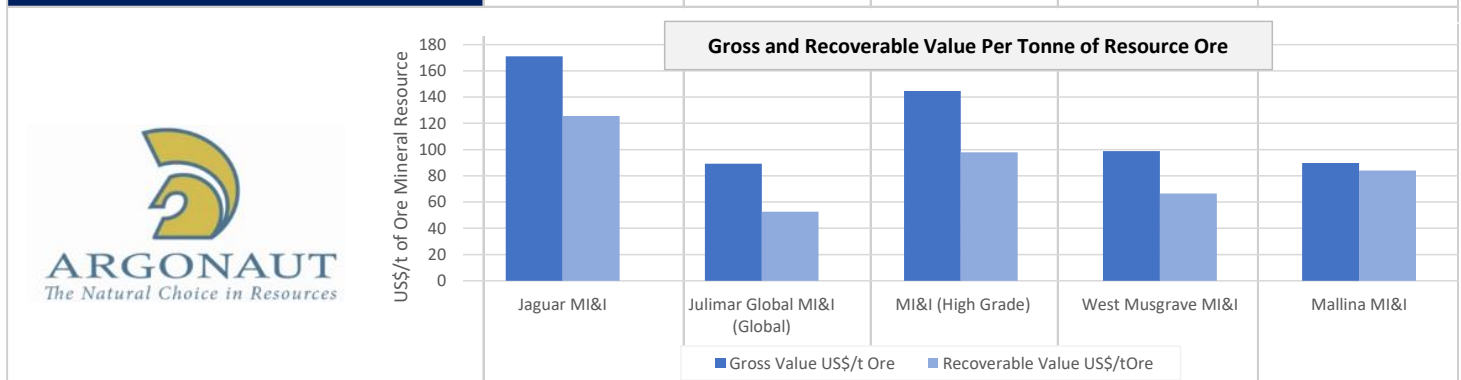
Resource Value Comparison

We begin our comparative analysis with Resource Value

As a starting point we compare project Mineral Resource Estimates (MRE) Resources on a Gross and Recoverable value basis. The in-situ Gross Value of CHN's Julimar Resources reported at a headline Global 560Mt tonnage is US$49B, dwarfing relative peers. However, applying recoveries for each metal reduces this figure to US$29B, roughly in line with West Musgrave's (BHP) Recoverable Value of US$26B. On a Recoverable Value per tonne of Resource basis, CTM is a clear standout at US$126/t compared with US$53/t for the lower grade Julimar global resource, US$98/t for Julimar's High Grade Resource, US$67/t at West Musgrave and US$84/t at DEG's Mallina.

provides a graphical representation of comparative Gross, Recoverable, Payable and Margin Values.

Table 4: Resource and recovery information for peer set.

	Centaurus Metals	Chalice Mining		BHP Group	DeGrey Mining
Owner Name	Centaurus Metals	Chalice Mining		BHP Group	DeGrey Mining
ASX Company Code	CTM	CHN		BHP	DEG
Project	**Jaguar**	**Julimar Global**		**West Musgrave**	**Mallina**
Location	Carajas, Brazil	South-West Western Australia		Eastern WA	Pilbara, WA
Development Stage	Scoping, DFS 2023	Advanced Exploration		Construction	Pre-Feasibility
Resource Type	**MI&I**	**MI&I (Global)**	**MI&I (High Grade)**	**MI&I**	**MI&I**
Tonnage (Mt)	108	560	120	390	251
Ni % Grade	0.87	0.16	0.2	0.3	0
Cu % Grade	0.06	0.09	0.18	0.33	0
Co % Grade	0.0269	0.015	0.017	0.012	0
Zn % Grade	0.32	0	0	0	0
3E g/t Grade	0	0.88	1.62	0.23	0
Au g/t Grade	0	0	0	0	1.3
Metal Recovery (Source)	MRE/Release	MRE/Release	MRE/Release	DFS/Ann	PFS
Ni %	75%	45%	55%	69%	0%
Cu %	70%	85%	90%	77%	0%
Co %	55%	45%	55%	0%	0%
Zn %	70%	0%	0%	0%	0%
3E g/t	0%	65%	70%	65%	0%
Au g/t	0%	0%	0%	0%	94%
Gross Value of MRE (US$B)	**19**	**49**	**33**	**38**	**13**
Recoverable Value of (MRE US$B)	**14**	**29**	**21**	**26**	**12**
Gross Value US$/t Ore	171	89	145	99	90
Recoverable Value US$/tOre	126	53	98	67	84

Gross and Recoverable Value Per Tonne of Resource Ore

Source: Argonaut, Factset, CTM, CHN, BHP/OZL, DEG, Others

Mining Inventory Value

Table 5 presents Argonaut's project development parameters including potential mineable inventory (or Reserve), assumed product output and relevant metal payabilities. These assumptions may not reflect the view of relevant corporate entities.

Table 5: Comparative project development scenario parameters and outcomes.

	Centaurus Metals	Chalice Mining		Oz Minerals	DeGrey Mining
Owner Name	Centaurus Metals	Chalice Mining		Oz Minerals	DeGrey Mining
ASX Company Code	CTM	CHN		BHP	DEG
Project	**Jaguar**	**Julimar**		**West Musgrave**	**Mallina**
Location	Carajas, Brazil	South-West Western Australia		Eastern WA	Pilbara, WA
Development Stage	Scoping, DFS 2023	Advanced Exploration		Construction	Pre-Feasibility
Estimated Build Start /FID Date	CY2024	>CY2027		CY2023	CY2025
Dominant Payable Metals	Ni-Cu-Co-Zn	PGM-Ni-Cu-Co		Ni-Cu	Au
Development Scenario	**2.7Mtpa POX Sulph**	**20Mtpa POX MHP**	**5Mtpa HG POX Sulph**	**13.5Mtpa POX MHP**	**10Mtpa POX Doré**
Initial Capital Expenditure [excl-prestrip] A$M	607	1600	786	1850	985
Operational Mine Life (Years)	16	21	19	21	15
Ore Tonnes Processed (Mtpa)	2.7	20	5	13.5	10
Global Mining Strip Ratio [inc Pre-strip]	11.5	1.2	6	2.8	6.1
Reserve / Inventory	*Inventory*	*Inventory*	*Inventory*	*Reserve*	*Reserve*
Tonnage (Mt)	60	400	90	270	136
Ni%	0.85	0.16	0.20	0.31	0.00
Cu%	0.06	0.09	0.18	0.34	0.00
Co%	0.03	0.02	0.02	0.01	0.00
Zn%	0.30	0.00	0.00	0.00	0.00
3Eg/t	0.00	0.88	1.62	0.23	0.00
Aug/t	0.00	0.00	0.00	0.00	1.55
Metal Product	*SS/Announce*	*Assumption*	*Assumption*	*DFS/Ann*	*PFS*
Nickel	Sulphate	Ni-Co MHP	Sulphate	Ni-Co MHP	-
Copper	Unvalued	Cu-3E Sulph Con	Cathode	Cu Concentrate	-
Cobalt	Hydroxide	Ni-Co MHP	Hydroxide	Ni-Co MHP	-
Zinc	Hydroxide	-	-	-	-
3E-PGM	-	Cu-3E Sulph Con	Powder	-	-
Gold	-	-	-	-	Doré
Metal Product Payability Assumption					
Nickel (%)	107%	85%	107%	85%	0%
Copper (%)	0%	73%	99%	97%	0%
Cobalt (%)	90%	85%	90%	85%	0%
Zinc (%)	90%	0%	0%	0%	0%
3E-PGM (g/t)	0%	84%	98%	50%	0%
Gold (g/t)	0%	0%	0%	0%	100%
Payable Metal Produced Per Annum					
Ni (kt)	23.3	12.2	5.9	24.5	0.0
Cu (kt)	0.0	11.2	8.0	34.3	0.0
Co (kt)	0.4	1.1	0.4	0.0	0.0
Zn (kt)	6.4	0.0	0.0	0.0	0.0
3E PGM (koz)	0.0	307.2	178.7	32.4	0.0
Au (koz)	0.0	0.0	0.0	0.0	466.5
Gross Value of Inventory US$B	**10.3**	**35.7**	**13.0**	**26.7**	**12.2**
Recoverable Value of Inventory US$B	**7.5**	**21.1**	**8.8**	**18.0**	**11.4**
Payable Value of Inventory US$B	**7.7**	**17.4**	**8.8**	**15.2**	**11.4**

Source: Argonaut, Factset, CTM, CHN, BHP/OZL, DEG, Others
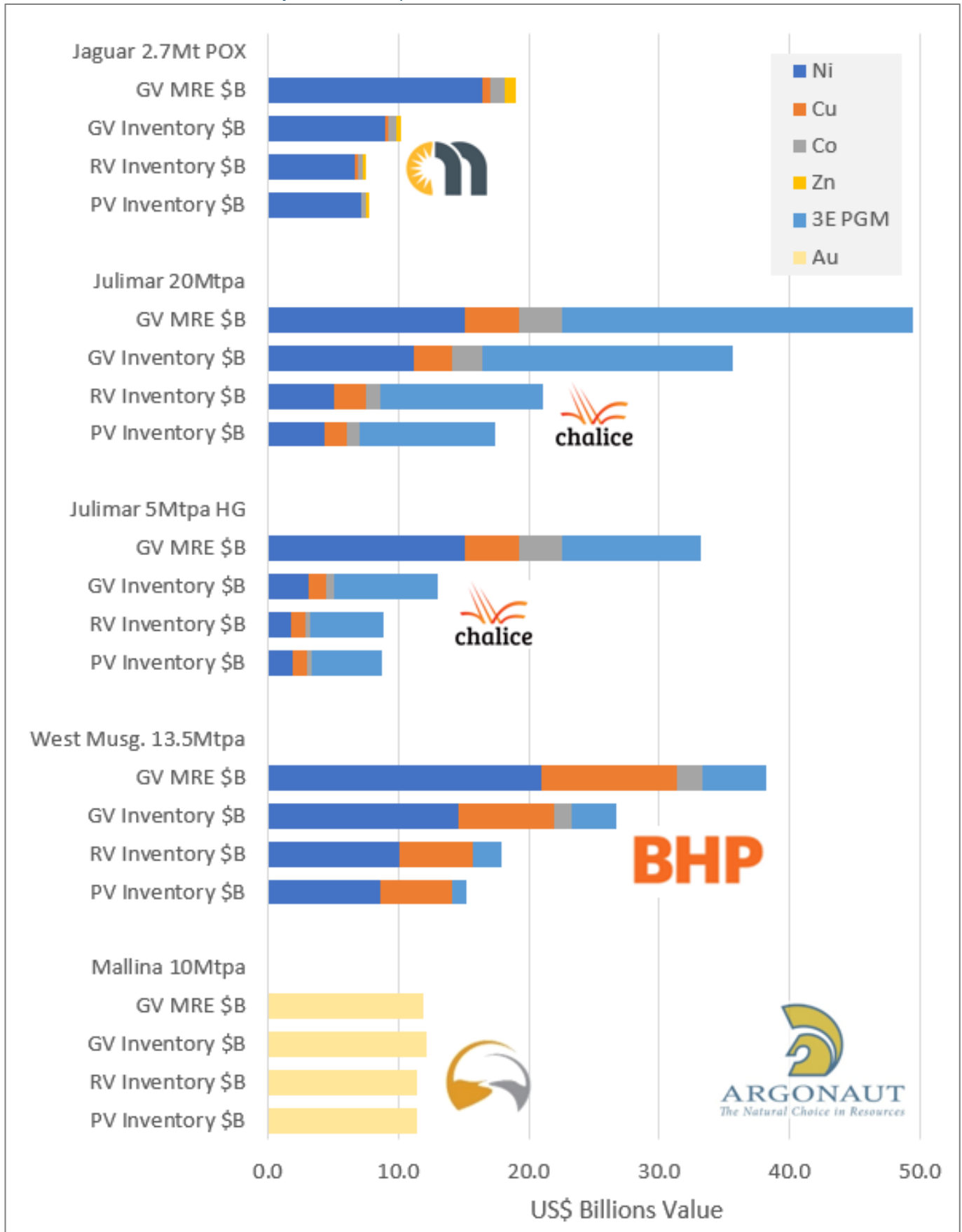
Project Development Models

Our project cash flow models compare potential project development parameters and outcomes are shown in Table 6 below.

Table 6: Comparison of financial model parameters for projects and estimated NPV7 estimates for development scenarios.

Owner Name	Centaurus Metals	Chalice Mining		BHP Group	DeGrey Mining
Project	Jaguar	Julimar		West Musgrave	Mallina
Estimated Build Start /FID Date	CY2024	>CY2027		CY2023	CY2025
Dominant Payable Metals	Ni-Cu-Co-Zn	PGM-Ni-Cu-Co		Ni-Cu	Au
Development Scenario	2.7Mtpa POX Sulph	20Mtpa POX MHP	5Mtpa HG POX Sulph	13.5Mtpa POX MHP	10Mtpa POX Doré
Operational Life (Years)	16	21	19	21	15
Initial Capital Requirement- Excl strip (US$M)	425	1120	550	1295	690
Initial Capital Requirement- Excl strip (A$M)	607	1600	786	1850	985
Capital Intensity (Initial) US$/t NiEq LOM	1038	1072	1040	1422	984
LOM Payable NiEq Production (kt)	409	1045	529	911	701
Avg Payable NiEq Tonnes per annum (kt)	25	50	28	43	48
Avg Payable Revenues (A$ M)	628	1244	696	1084	1200
Global Strip Ratio (includes pre-strip)	11.5	1.2	6	2.8	6.1
Est Mining cost (US$/t Mined)	2.7	2.2	2.5	1.9	2.6
Unit Opex (US$/t Milled)	70	22	53	26	36
Mining Opex (US$/t Milled)	33.8	4.8	17.5	7.2	18.3
Process Opex (US$/t Milled)	30.0	12.0	30.0	11.9	16.8
Logistics Opex (US$/t Milled)	4.6	3.0	3.0	4.7	0.0
Other Opex (US$/t Milled)	1.6	2.0	2.0	2.1	1.0
Avg Annual OPEX (A$ M)	385	892	536	714	735
OPEX (US$/lb NiEq)	4.9	5.7	6.1	5.2	4.9
Margin Value (US$/t Ore Mined)	91	31	64	43	69
Margin Value (US$/t Ore Mined)	133	31	64	43	69
Applicable Combined Royalty Rate	4.6%	5.0%	5.0%	5.0%	2.5%
Avg Annual Royalty Payments (A$M)	16	31	16	29	17
Avg EBITDA (A$ M)	342	589	305	555	668
Avg Annual Depreciation (Flat LOM)	37	76	41	88	67
Tax Rate (First 10 Years)	15%	30%	30%	30%	30%
Tax Rate (After 10 Years)	34%	30%	30%	30%	30%
Avg Annual NPAT (A$ M) (First 10Y)	269	375	193	346	435
Avg Annual NPAT (A$ M) (After 10Y)	209	375	193	346	435
Capital Payback Period Years (EBITDA based)	1.8	2.7	2.6	3.3	1.5
Capital Payback Period Years (NPAT based)	2.3	4.3	4.1	5.4	2.3
Build Date NPV Reported in Company Study	NPV(8) A$1.11B	NA	NA	NPV(6.5) A$2.2B	NPV(5) A$2.7B
	(13Y Mine life)				
Unoptimized Build Date NPV(7) A$M	**$1,627**	**$2,494**	**$1,237**	**$2,088**	**$2,637**
NPV Value Per Share	3.73	5.72	3.20	0.42	1.71
Unoptimized Present Day NPV(7) A$M	**$1,403**	**$1,737**	**$841**	**$2,088**	**$2,126**
NPV Value Per Share	3.22	3.98	2.18	0.42	1.38

Source: Argonaut

*Figure 6: Comparisons of total value of material contained within MRE's and Inventories for each development scenario.*

Upon considering recovery, payability and cost of production we derive the Inventory Margin Value for each development scenario under our base case parameters and present these in Figure 7. The gulf between scenario value is reduced on a Margin Value (MV) basis. By our figures CTM's EV is equivalent to 5% MV versus 20% of MV for DEG. CHN has an EV equivalent to 21% and 44% of MV for our 20Mtpa POX and 5Mtpa HG POX scenarios respectively. Figure 8 presents average annual EBITDA and NPAT for each scenario. Jaguar's average NPAT (A$269M) falls short of Mallina (A$435M), West Musgrave (A$346M) and Julimar 20Mtpa POX (A$301M), although beats our Julimar 5Mtpa HG (A$193M) scenario.

The gulf between deposit values retracts when compared on a Margin Value basis

Figure 7: Base Case extractable Margin Value for set of scenarios versus owner Market Cap and Enterprise Value. Annotation indicating EV as percentage of extractable Margin Value.
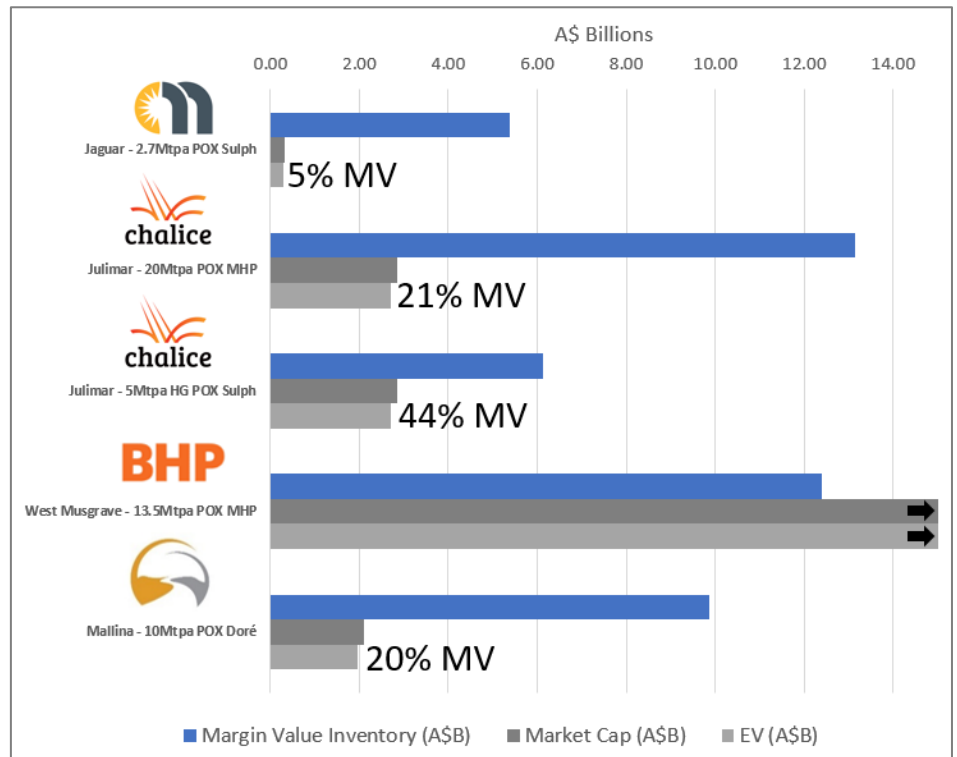
Some peers are trading at high relative premiums to their deposits extractable Margin Value

Source: Argonaut

Figure 8: Annual EBITDA & NPAT performance for development scenarios.
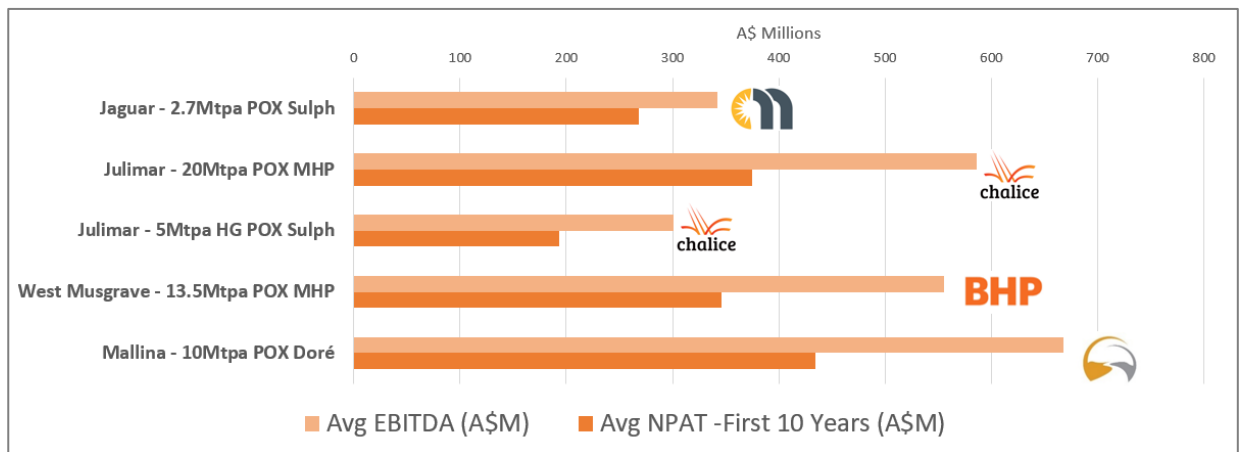
Source: Argonaut

Discounted Cashflow Modelling

Our simple cashflow models are unoptimized and make no allowance for selective high-grade mining in early years of mine life. We assume $10M in project expenses per annum preceding production for Reserve drilling and studies. All scenarios are budgeted 24m for build and 50% productivity during a 12-month ramp-up period.

Our development scenario cashflow models suggest positive economic outcomes for all projects using our base case metal price, discount rate and USD:AUD exchange rate.

West Musgrave and Mallina both return strong NPV's using our base model assumptions. The build date NPV values returned for each of these deposits are consistent with those published in applicable feasibility studies if corrected for applied discount rates. We feel this validates our basic modelling approach.

Using our Base Case conditions, Jaguar returns a Build Date NPV7 of A$1.6B and Present Day NPV7 of A$1.4B (Figure 7 & Table 7). Our Mallina scenario generates the highest Base Case build date NPV7 of A$2.6B, followed by A$2.5B for our Julimar 20Mtpa case and West Musgrave output of A$2.1B. Our High-Grade Julimar model generated the lowest Build Date NPV7 at A$1.3B.

Jaguar's NPV is robust and holds up significantly better to negative flexes to metal prices, operating expenditure and capital expenditure (Table 7 and Figure 9). This is due to Jaguar's high value ore and relatively low capital requirements compared with peers. Despite having a high operating cost, Jaguar's US$91/t Margin Value per tonne of ore mined is significantly higher than peers (Table 6). Note that this value is further boosted by ore sorting, increasing Margin Value per tonne Milled to US$133/t.

We complete simplified cashflow modelling of each development scenario

Our sensitivity analysis matrix compares scenario NPVs based on fluctuations in Metal Price, OPEX, CAPEX and discount rate

Table 7: Sensitivity analysis of discount rate and metal pricing for Argonaut's development scenarios of group set.

| Owner Name	Centaurus Metals	Chalice Mining		BHP Group	DeGrey Mining
Development Scenario	2.7Mtpa POX Sulph	20Mtpa POX MHP	5Mtpa HG POX Sulph	13.5Mtpa POX MHP	10Mtpa POX Doré
Scenario	Jaguar - 2.7Mtpa POX Sulph	Julimar - 20Mtpa POX MHP	Julimar - 5Mtpa HG POX Sulph	West Musgrave - 13.5Mtpa POX MHP	Mallina - 10Mtpa POX Doré
Initial Capital Requirement- Excl strip (A$M)	607	1600	786	1850	985
Capital Intensity (Initial) US$/t NiEq LOM	1038	1072	1040	1422	984
Build Date NPV (A$M) - Base Case	1627	2494	1237	2088	2637
Present Day NPV(7) A$M - Base Case	1403	1737	841	2088	2126
Build Date NPV 5% (A$M)	2025	3385	1649	2929	3254
Build Date NPV 9% (A$M)	1312	1828	924	1460	2142
Build Date NPV +20% Metal Prices (A$M)	1779	2494	1237	2088	2637
Build Date NPV -20% Metal Prices (A$M)	1842	3197	1563	2559	3452
Build Date NPV -20% OPEX (A$M)	2199	3625	1884	2992	3381
Build Date NPV +20% OPEX (A$M)	1352	1364	591	1183	1893
Build Date NPV -20% CAPEX (A$M)	2309	3914	2026	3327	3559
Build Date NPV +20% OPEX (A$M)	1243	1074	449	848	1715

Source: Argonaut

The Radar plot presented in Figure 9 presents Build date NPV estimates for each sensitivity scenario. Our Julimar Build Date NPV's range from as low as A$1.2B, up to $2.3B. Mining scenario inventories which have lower payable value per tonne of ore are more sensitive to higher costs or lower metal prices.

Our Julimar scenario modelling is particularly vulnerable to downside with NPV's collapsing under a 20% lower metal price environment (Figure 9). On the flipside, our Julimar 20Mtpa scenario provides the best leverage to higher metal prices.

Figure 9: NPV sensitivity radar chart for our project scenarios. Higher NPVs on outside rings. Red zone in centre represents NPVs less than A$500M. Grey zone is equal to Jaguar's Base Case NPV.
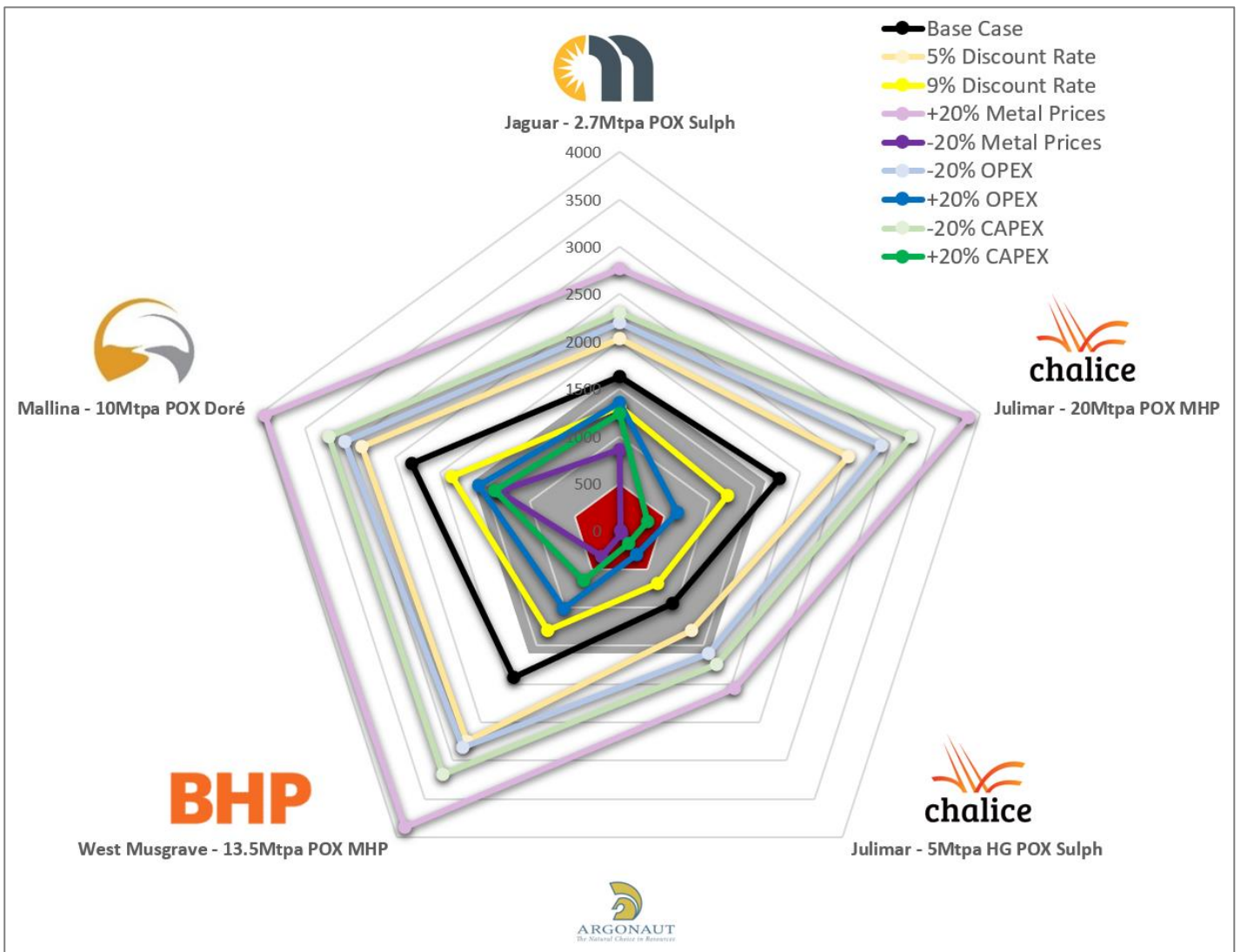
Source: Argonaut

Relative Corporate Valuations

In Table 8 we compare the relative valuation of owners to our relevant scenario outcomes. On an enterprise value basis CTM's is currently at 0.8x projected Jaguar annual EBITDA, meanwhile DEG is trading at 2.8x Mallina and CHN at 4.4x and 8.5x Julimar annual EBITDA for our two development scenarios.

Centaurus benefits from a 15% tax rate for Jaguar during the first 10 years of operation, boosting returned annual NPAT. CTM is currently trading at 1.1x annual NPAT, while DEG is at 4.3x NPAT and CHN 7.0x and 13.5x for our 20Mtpa and 5Mtpa scenarios respectively.

CTM is currently trading at 2.6x Fully Funded EV/EBITDA versus 4.2x for DEG and 7.1x/11.1x for CHN (Table 8).

If CTM was valued on the same EBITDA and NPAT ratios as that of its peers, CTM's share price (currently A$0.71) would range somewhere between A$1.88-8.92 (Table 8).

LOM Capital intensity requirements (excluding mining) for the Jaguar, Chalice and DeGrey development scenarios all range within a band of US$984-1072/t NiEq production. West Musgrave is higher at US$1422/t NiEq LOM production. Note that our NPV and relative owner share price estimates make no allowance for future equity dilutions, exploration upside or other assets.

Our unoptimized present day NPV7 estimate for Jaguar is A$1.4B, equivalent to A$3.22 per share. If this value was fully reflected in CTM's share price, and accounting for cash held, CTM would be trading at A$3.35 per share.

Our build date NPV suggests further room for price growth as DEG moves closer to development in CY2025. Our base case unoptimized NPV estimates for our Julimar scenarios suggest CHN is fully or overpriced compared to the Company's current market capitalisation. CHN's position improves considerably if assumed capital or operating costs are substantially lower than modelled in our base case (Table 7).

Table 8: Relative corporate value comparisons for each peer scenario.

Owner Name	Centaurus Metals	Chalice Mining		BHP Group	DeGrey Mining
ASX Company Code	CTM	CHN		BHP	DEG
Current Share Price (A$)	0.71	7.13		42.82	1.30
Market Capitalisation ($A M)	310	2756		213524	2014
Enterprise Value ($A M)	287	2606		220424	1854
Project	Jaguar	Julimar		West Musgrave	Mallina
Development Scenario	2.7Mtpa POX Sulph	20Mtpa POX MHP	5Mtpa HG POX Sulph	13.5Mtpa POX MHP	10Mtpa POX Doré
Initial Capital Requirement- Excl strip (US$M)	425	1120	550	1295	690
Operational Life (Years)	16	21	19	21	15
Avg Payable NiEq Tonnes per annum (kt)	25.1	49.8	27.8	43.4	48.0
Capital Intensity (Initial) US$/t NiEq Annual	16908	22505	19752	29863	14370
Capital Intensity (Initial) US$/t NiEq LOM	1038	1072	1040	1422	984
OPEX (US$/lb NiEq)	4.9	5.7	6.1	5.2	4.9
Avg EBITDA (A$ M)	342	589	305	555	668
Owner EV/EBITDA Trading Multiple	0.8 x	4.4 x	8.5 x	-	2.8 x
Fully Funded EV/EBITDA Trading Multiple	2.6 x	7.1 x	11.1 x	-	4.2 x
Avg Annual NPAT (A$ M) (First 10Y)	269	375	193	346	435
Owner EV/NPAT Trading Multiple	1.1 x	7 x	13.5 x	-	4.3 x
Fully Funded EV/NPAT Trading Multiple	3.3 x	11.2 x	17.5 x	-	6.5 x
CTM SP @ Peer EV/EBITDA Multiple (A$)	0.71	2.96	5.67	-	1.88
CTM SP @ Peer EV/NPAT Multiple (A$)	0.71	4.62	8.92	-	2.86
Unoptimized Build Date NPV(7) A$M	1627	2494	1237	2088	2637
NPV Value Per Share	3.73	5.72	3.20	-	1.71
Implied SP Including Full Value of NPV	3.77	6.71	3.46	-	1.77
Premium to Current SP (excludes funding reqs)	430%	-6%	-52%	-	36%
Estimated Build Start /FID Date	CY2024	>CY2027	>CY2027	CY2023	CY2025
Unoptimized Present Day NPV(7) A$M	1403	1737	841	2088	2126
NPV Value Per Share	3.22	3.98	2.18	-	1.38
Implied SP Including Full Value of NPV	3.25	4.75	2.43	-	1.44
Premium to Current SP (excludes funding reqs)	358%	-33%	-66%	-	11%

Source: Argonaut

CTM scans cheaply on almost all metrics compared with the owners of project peers

Comparative Analysis Conclusions

Compared with our peer comparison developments Jaguar stacks up as a robust and highly profitable development. Using our Base Case parameters Jaguar is expected to produce average annual NPAT equivalent to BHP's West Musgrave. Downside risk to the operation is mitigated by Jaguars high Margin Value ore, insulating it from weakness in metal prices and operating cost inflation.

CTM Valuation

Successful completion of recent pilot scale pressure oxidation test work for production of battery grade nickel sulphate and recent exploration success has prompted a review in our Jaguar development model and valuation. We have modified our model for extraction of 60Mt of ore grading 0.80% Ni plus by-products from an open pit only operation. Our pit model assumes a post-strip ore to waste strip ratio of 1:8.8 We have removed underground development to simplify operational execution.

We have updated our CTM valuation to include a Jaguar development open pit only scenario

We model a conservative 24-month development period starting construction in Q1 CY2025 with commissioning beginning late 2026 and commercial production ramp up from Q1 2027.

Table 9: CTM company level net asset valuation.

Company Valuation summary	A$M	A$/sh
Jaguar Project NPV9 AUD	1258	2.94
Risk Discount (Study Maturity 25%)	-314	-0.74
Jambreiro Project	40	0.09
Exploration, all sites	195	0.46
Corporate overheads	-158	-0.37
Cash & Equivalents	23	0.05
Debt	0	0.00
Option/equity dilution	-209	-0.49
Total	834	1.95

^ Future Option/Equity Dilution is calculated using an NPV formula that considers value of dilutionary shares/options in future periods against the current project valuation

Source: Argonaut

We have increased our initial capital expenditure requirements to US$440M

We assume US$440M in initial capital expenditure including pre-strip. We have increased our underlying operation cost variables to accommodate inflation. Our model generates an average life-of-mine AISC of US$5.2/lb of payable nickel throughout life of mine. We maintain our 107% metal payability for a nickel sulphate product. We use a static long term nickel price of $17,500/t.

We assume project funding will be provided through a ~60:40 debt:equity mix. Future Option/Equity Dilution is calculated using an NPV formula that considers value of dilutionary shares/options in future periods against the current project valuation. We assign a A$40M value to the Jambreiro Iron Ore Project.

We estimate a present day NPV9 of A$1258M for the Jaguar Project, equivalent to $2.32 per share. We apply a Study maturity risk discount of 25% equivalent to -A$0.74 per share. This risk discount will be unwound with advancement of studies.

Recommendation & Valuation

Our comparative analysis has boosted our conviction on CTM. Jaguar is an outstanding, nickel sulphide development which is likely to return strong profits to investors. We maintain our Speculative Buy and increase our valuation to A$1.95 per share (previously $1.69).

Appendix: Calculation of Value Classes

In this section we detail our methodology for estimation of Gross, Equivalent, Recoverable, Payable (Payable) and Margin comparative values.

Gross Value

Gross Value represents the raw value of metals in either a deposit or per tonne of rock. Gross Value per tonne of ore (or deposit) is calculated by aggregating the multiples of elemental grade and their relevant metal sale value (example shown in Table 10). Comparison by gross value of different ore deposits is flawed due to the fact that it fails to take into account recoveries, payabilities and cost of production.

Table 10: Example calculation of Gross IGV per tonne of ore.

Metal	Ni	Cu	Co
Metal Price Assumed	$17,500/t	$8,000/t	$40,000/t
Deposit Raw Metal Grade	0.18% Ni	0.10% Cu	0.02% Co
Gross Value of metal /t of Ore	$32/t	$8/t	$8/t
	(0.18% x 17,500)	(0.10% x 8,000)	(0.02% x 40,000)
Gross Value /t Ore	$46/t Ore		

Source: Argonaut

Equivalent Value

Metal Equivalent Grades (and tonnes) are frequently quoted as part of resource company drilling or resource announcements. However, the derivation and meaning of these values is poorly understood by the general investment community. A common market misconception is that metal equivalent grades of the same type (eg. NiEq or CuEq) can be reliably compared across deposits. A core feature of a Metal Equivalent Grades is that it represents the aggregate value of metals as a primary element <u>including its relevant metal recovery.</u>

When component values are aggregated to a single metal equivalent value with a low metallurgical recovery, the resulting grade can appear inflated because few readers instinctively consider recovery factors. An example of this is our derivation of $46/t ore Gross Value calculated from individual metals in Table 10 versus our Nickel Equivalent Value of $53/t ore calculated in our Table 11 example.

In an ideal world we would prefer that regulators enforced statement of recovery whenever Equivalent Values were used. For example the Nickel equivalent grade of 0.305% NiEq presented in Table 11 would be stated as "0.305% NiEq / 45% Recovery".

The below example outlines the most common method to calculate metal equivalent values for resources and drill holes from a suite of multi element assay. In this example we calculate the nickel equivalent value for a deposit containing nickel, copper and cobalt at various grades and recoveries.

Equivalent Metal Calculation Method:

A. Assign metal price assumptions and calculate value conversion factors for the chosen metal (in this case nickel).

B. Calculate the recoverable grade of each metal by multiplying the raw value by recovery.

C. Calculate the recoverable nickel value of each metal by multiplying the recoverable grade by the conversion factor calculated in step A.

D. Reinflate the recoverable nickel grades to 'raw' nickel equivalent deposit grade by dividing by the nickel recovery (45%)

E. Sum these values to attain a 'Nickel Equivalent' value for the deposit

Table 11: Method for calculation of nickel equivalent values for a Ni-Cu-Co deposit.

	Metal	Ni	Cu	Co
A	Metal Price Assumed	$17,500/t	$8,000/t	$40,000/t
A	Value Conversion Factor for Nickel	1 (17500/17500)	0.46 (8000/17500)	2.29 (40000/17500)
	Deposit Raw Metal Grade	0.18% Ni	0.10% Cu	0.02% Co
	Deposit Metal Recovery	45%	85%	45%
B	Recoverable Grade of Metal	0.081% (0.18%*45%)	0.085% (0.1%*85%)	0.008% (0.02%*45%)
C	Recoverable Nickel Equivalent Value	0.081 (0.081*1)	0.039 (0.085*0.46)	0.017 (0.008*2.29)
D	Inflate to Equivalent Ni Grade of Ore	0.18 (0.081/45%)	0.086 (0.039/45%)	0.039 (0.008/45%)
E	Deposit Nickel Equivalent Grade	0.305% NiEq (0.18+0.086+0.039)		

Source: Argonaut

Recoverable Value

We define recoverable value as the total value of metals recoverable from a tonne of ore (or deposit). In our view this a superior measure compared with Gross or Equivalent Value as it accounts for losses from mineral processing recoveries. Recoverable value is calculated by multiplying the Gross Value components (or Equivalent Value) by their respective recoveries. Table 12 and Table 13 provide examples of Recoverable Value calculations from raw and equivalent grades respectively (note they are equal).

Table 12: Calculation of Recoverable value /t Ore from individual metals grades.

Metal	Ni	Cu	Co
Metal Price Assumed	$17,500/t	$8,000/t	$40,000/t
Value Conversion Factor for Nickel	1 (17500/17500)	0.46 (8000/17500)	2.29 (40000/17500)
Deposit Raw Metal Grade	0.18% Ni	0.10% Cu	0.02% Co
Deposit Metal Recovery	45%	85%	45%
Recoverable Grade of metal /t of Ore	0.081% (0.18% x 17,500)	0.085% (0.10% x 8,000)	0.008% (0.02% x 40,000)
Recoverable Value /t of Ore	$14/t (0.081% x 17,500)	$7/t (0.085%x 8,000)	$3/t (0.008% x 40,000)
Recoverable Value /t Ore	$24/t Ore		

Source: Argonaut

Table 13: Calculation of Recoverable Value /t Ore from Nickel Equivalent grade.

Metal	Ni Equivalent
Metal Price Assumption	$17,500/t
Nickel Equivalent Grade	0.305% NiEq
Equivalent Value /t Ore	$53/t Ore
	(0.31% x 17500)
Nickel Recovery	45%
Recoverable Value /t Ore	$24/t Ore
	(53 x 45%)

Source: Argonaut

Payable Value

Determination of 'Payable', provides us with a guide for how much revenue will be generated per unit of ore after refinement. Our Payable value calculation includes corrections for metal 'payabilities'. The term payablility refers to the percentage of value returned to the miner from the refiner of the product. The percentage of payability varies depending on the metal and product type. For example, gold miners who produce almost pure doré bars will be paid close to 100% payability for their product. The applicable payable percentage for metals reflects the associated refinement expense, yield, technical complexity and the impact of deleterious elements.

The nickel producers are subject to a wide variety of metal payabilities depending on product produced. A traditional nickel miner selling at 16% Ni sulphide concentrate to a pyrometallurgy refiner may only be paid 70% of contained nickel, 40% for copper and nothing for platinum group elements. However, if the same miner sells to a hydrometallurgical refiner they could expect higher profitable recoveries for all metals. If the miner was to invest in its own hydrometallurgical refinement equipment then it would gain direct exposure to value upside. If a nickel miner produces a purified Nickel Sulphate or pCAM product they can potentially early greater that 100% metal payability.

Table 14: Example payability ranges for various nickel products.

Product Produced	Nickel Payability Range
Sulphide Concentrate	70-75%
Mixed Hydroxide Precipitate (MHP)	82-86%
Battery Grade Sulphate (NiSO4)	102-107%
Battery Grade precursor cathode (pCAM)	120-140%

Source: Argonaut industry knowledge

Payable Value is calculated by recoverable metal value by percentage of metal payability for the applicable product.

Table 15: Calculation of Payable Value /t Ore from Nickel Equivalent grade.

Metal	Ni Equivalent
Metal Price Assumption	$17,500/t
Nickel Equivalent Grade	0.305% NiEq
Equivalent Value /t Ore	$53/t Ore
	(0.31% x 17500)
Nickel Recovery	45%
Recoverable Value /t Ore	$24/t Ore
	(53 x 45%)
Payable Percentage	85% (MHP Product)
Payable Value /t Ore	$20.4 /t Ore
	(24 x 85%)

Source: Argonaut

Margin Value

Finally, we calculate the Margin Value per tonne of ore by subtracting costs per unit of production from the payable cost. Each project will have its own cost profile associated with scale, mining method, processing requirements etc. Determination of the Marginal Value provides us with a simple profit per unit of production and enables some basic economic modelling.

Figure 10: Calculation of Margin Value

Metal	Ni Equivalent
Metal Price Assumption	$17,500/t
Nickel Equivalent Grade	0.305% NiEq
Equivalent Value /t Ore	$53/t Ore
	(0.31% x 17500)
Nickel Recovery	45%
Recoverable Value /t Ore	$24/t Ore
	(53 x 45%)
Payable Percentage	85% (MHP Product)
Payable Value /t Ore	$20.4 /t Ore
	(24 x 85%)
Costs /t Ore	$15/t Ore
Margin Value	$5.4 /t Ore
	(20.4 – 15)

Key Risks to valuation

Timelines

Our discounted cash flow model is time dependant. Any delay to scheduled development or production will adversely effect on our valuation.

Metallurgical performance

Provisional metallurgical testing has been completed upon a limited set of samples and is unlikely to accurately represent true future performance. Pilot POX test programmes have been completed with positive outcomes.

Fluro-apatite is associated with mineralisation at the Jaguar project. Sulphide concentrate characterisation studies have concluded that fluorine is present in quantities that may attract a penalty. Production of a sulphate product via POX will eliminate this penalty risk.

Commodity Pricing

Value estimates are based on consensus long term commodity price forecasts. A 10% difference to the price of nickel over the modelled life of mine will result in a ~25% shift in project valuation.

Costs

Cost assumptions are based on operating and capital costs from CTM documentation and our knowledge of industry rates.

Exploration success

Valuation assumes that future exploration and investments achieve acceptable returns. Subjective value is attributed to exploration assets at Jaguar.

Interest rates/discount rates

Argonaut takes cash flow risk into account when choosing discount rates for different projects. Our valuation is sensitive to the discount rate used.

ESG credentials and sustainability

In this section we collate information regarding CTM's Environmental, Social and Governance performance. Refer to the disclosures section for commentary on Argonaut's approach to ESG.

Table 16: Environmental, Social, and Governance comments

COMMITMENT / DELIVERY	Positive
- Our view on commitment and delivery needs to be considered in the light of the stage of operations - ESG issues are addressed in announcements and on the Company's website - CTM has displayed strong engagement with local communities and various levels of government - More than 90% of the current Jaguar project workforce are from the south-eastern region of the state of Para - More than 80% of Jaguar project expenditure related to exploration and development work has been award to local community and regional suppliers - CTM has constructed a plant nursery on site in partnership with local municipalities - The Company has implemented an internship program with the University of Maraba in the fields of geology, mining and engineering - CTM has improved access roads to the Jaguar site. These are also used by the local communities - CTM donated a 20,000L water tank to the nearby village of Minerasul - Survey data suggests that 95% of the local community interviewed support the Jaguar Project	

INDUSTRY	Positive
- Nickel is vital to the manufacture of NCM lithium-ion batteries. The demand for lithium-ion batteries is expected to grow with a global economic shift towards decarbonisation - The current development plan for CTM is to produce an intermediate nickel sulphate product via treatment through Pressure Oxidation - A greenhouse gas emission analysis of CTM's planned sulphate product is expected to be lower than 95% of global nickel production. This low production emission profile is driven by availability of hydroelectricity and the hydrometallurgical route of processing	

REPORTING	Acceptable
- CTM provides information about sustainability within various company announcements - A formal ESG Framework was implemented in late 2021. This framework is based on the Towards Sustainable Mining Principles and the United Nations-supported Principles of Responsible Investment - In May 2023 CTM published its first sustainability report.	

* Please refer to disclosures section for Argonaut's approach to sustainability

Figure 11: Modelled greenhouse gas emissions for Jaguar versus global nickel production.
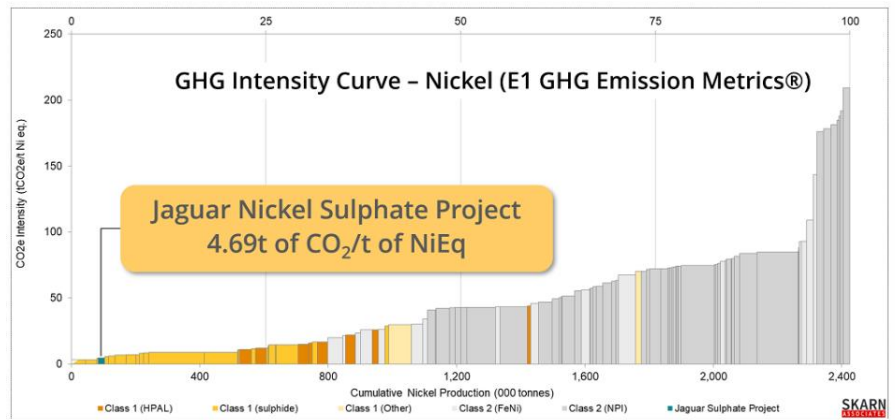
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Important Disclosure
The publishing analyst owns CTM shares.

Argonaut holds or controls 161,638 CTM shares.

Information Disclosure
Each research analyst of this material certifies that the views expressed in this research material accurately reflect the analyst's personal views about the subject securities and listed corporations. None of the listed corporations reviewed or any third party has provided or agreed to provide any compensation or other benefits in connection with this material to any of the analyst(s).

ESG and Sustainability Commentary
Argonaut has introduced sustainability analysis for selected companies under coverage. Our intention is to highlight ESG-related attributes or risks, as it is believed these will increasingly impact investment attractiveness, cost of capital, and valuation. It is considered in the context of the size and life-cycle stage of the company. Where sustainability risk is high relative to company size/maturity, the analyst will consider adjusting the valuation and/or opinion to reflect this risk. A brief rationale behind the view and its impact on the analysis may be provided in the report.

The following table summarises how we have approached this issue. It is not all inclusive and we do not purport to provide a rating that is inclusive of all the factors that may be considered in a full ESG ratings report.

Measure	Selected Analysis factors	View
Commitment, operational delivery & risk mitigation	Largely subjective: • Visible efforts to embrace a more sustainable future • Nature of operations, jurisdiction and environmental impact • Comparison to peers in the same industry/sector • Efforts to mitigate identified risks • Engagement with stakeholders • Corporate governance considerations and good citizenship • Diversity, equality, and inclusion • Company actions supportive of aspirational targets • Energy usage and efforts to mitigate climate risks • Any reported ESG-related/corporate governance issues	Positive Neutral Negative
Industry/Sector sustainability	Largely subjective: • Commodity/product/service contribution to sustainable future • Industry/sector/business model resilience as pertains to ESG factors • Sector energy intensity and/or carbon emissions • Downstream/supply chain impact on sustainability	Positive Neutral Negative
Company ESG reporting	Largely objective (but in context of company size/maturity): • Sustainability/corporate governance report/audit • Availability of data to back up narrative (emissions, water usage etc.) • Reference to ESG-related framework (GRI, SASB, TCFD, UN SDGs, MSA) • Rating from a recognised global ESG ratings agency	Detailed Acceptable Limited

In the absence of uniform global reporting standards Argonaut's current approach and views are necessarily largely subjective. Argonaut will consider ways to formalise ratings as the ESG ratings industry and measurement criteria evolve, but in the meantime investors should do their own analysis and/or obtain independent ratings from ratings providers.

Note that in this context Argonaut uses sustainability and ESG interchangeably.

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