

2 December 2021

**CLA AU Mining & Metals**


Source: Bloomberg

**Market data**

Price (A\$)	0.02
Valuation (A\$)	0.12
12m High (A\$)	0.07
12m Low (A\$)	0.02
Shares (m)	1,047
Mkt Cap (A\$ m)	24.0

**Company summary**

Celsius owns a suite of highly prospective copper-gold properties in the Philippines. This includes the flagship MCB project, a high-grade porphyry deposit with a JORC compliant resource that Celsius is now advancing through feasibility study and permitting with a view to fast-tracking to production.

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# Celsius Resources\*

## Study highlights MCB's low-cost development credentials

The MCB scoping study confirms our view that the project holds potential to emerge as a low-cost, long-life copper-gold operation for a capital outlay that is modest by the standards of porphyry projects globally (and which therefore has realistic scope for independent funding). Indeed, the robust economics (the study envisages C1 cash costs over the first ten years at just US\$0.73/lb copper, net gold credits) could offer the potential for the project to be significantly debt levered – the scoping study concludes that the US\$253m estimated initial capital outlay could be recovered in under three years at commodity prices below current spot levels. Yet Celsius' market valuation languishes at a heavy discount to both the US\$464m NPV concluded by the study and market peers (most of whom have much more capital-intensive projects). The scoping study should kick start a deserved re-rating, with additional catalysts over the coming months as Celsius progresses full feasibility work and further explores both MCB and its wider portfolio of prospective ground in the Philippines.

- ▶ **Low-cost production potential confirmed:** The MCB scoping study demonstrates the potential for the project to be developed as a 25-year, low-cost underground mining operation focused on exploiting the high-grade core of the copper-gold porphyry resource. The study calls for average production of 16kt pa of copper and 19koz pa gold (contained in concentrate) over the full life-of-mine (LOM), and 22kt pa and 27koz pa of copper and gold respectively over the first ten years. Benefitting from forecast average copper grades of over 1% in the first decade, and anticipated high process copper recovery rates of 94%, C1 cash operating costs of just US\$0.73/lb Cu (net of gold credits at US\$1,695/oz) are believed possible over the first ten years (US\$1.29/lb over the LOM).
- ▶ **Robust economics compare favourably against peers:** This low operating cost structure should drive strong cash flow generation in the mine's early years, and the scoping study suggests that the estimated US\$253m of initial capital expenditure (low compared with typical porphyry projects) could be recouped in under three years. We believe such robust economics, particularly over the first ten years of the operation, should assist future efforts to secure construction financing. At Celsius' base-case commodity price assumptions of US\$4.00/lb Cu and US\$1,695/oz Au, the study concludes pre- and post-tax NPV<sub>8%</sub> estimates of US\$618m and US\$464m respectively, and a post-tax IRR of 31%. The latter is higher than the rates of return typically expected of porphyry projects, reflecting MCB's above-average copper grades (and therefore potential for low-operating costs to be achieved at a more modest production scale than typically required by porphyries).
- ▶ **Project to proceed directly to next stage:** Given the robust scoping outcomes, Celsius' has decided to immediately start progressing the project through the various workstreams required to convert the MCB exploration licence to full mining title status in anticipation of future development, in accordance with Philippines regulatory requirements. Initial planned full feasibility study work will include in-fill drilling to upgrade targeted resources to measured status and further metallurgical testing.
- ▶ **Upside potential:** The scoping study assumes exploitation of <30% of contained copper in MCB's currently delineated total resource base. Moreover, significant potential remains to increase resources both along strike and down dip from the current limits of drilling (further exploration is planned with the aim of expanding the high-grade portion of the current resource model). We therefore see scope for upside potential to the scoping study economics if higher-grade tonnes can be added to the back end of the mine life, and/or if the mine life is extended (or future production rates expanded).
- ▶ **Valuation:** Our revised NPV estimate (incorporating the scoping study findings, but using US\$3.50/lb Cu) is around 17x Celsius' current share price. Even after application of conservative risk adjustments to reflect stage of development, our near-term target valuation of A\$0.12/share implies 5x upside. This is a compelling entry point to a porphyry story that is significantly differentiated from market peers given its low capital intensity (and therefore potential to be funded and developed independently), and which we estimate could generate EBITDA of cUS\$140m pa once in production. We think the scoping study should prompt re-rating and see further catalysts on feasibility progress and positive exploration news-flow from the company's wider project portfolio (including the Sagay project in the Philippines, where a drilling programme recently commenced).

## Scoping study highlights potential for MCB to be developed as a low-cost, long-life sustainable copper-gold operation

Celsius has completed a scoping study of its flagship Maalinao-Caigutan-Biyog (MCB) project in the Philippines that demonstrates the potential of developing the project as a long-life, low-cost underground mining operation producing high-quality copper-gold concentrate via conventional flotation-based processing techniques. Using US\$4.00/lb copper and US\$1,695/oz base-case commodity price assumptions, the study concludes a post-tax project NPV<sub>8%</sub> of US\$464m and an IRR of 31%. The latter compares favourably with the rate of returns typically expected of porphyry projects, a reflection of the high grade of MCB's core versus many porphyry deposits.

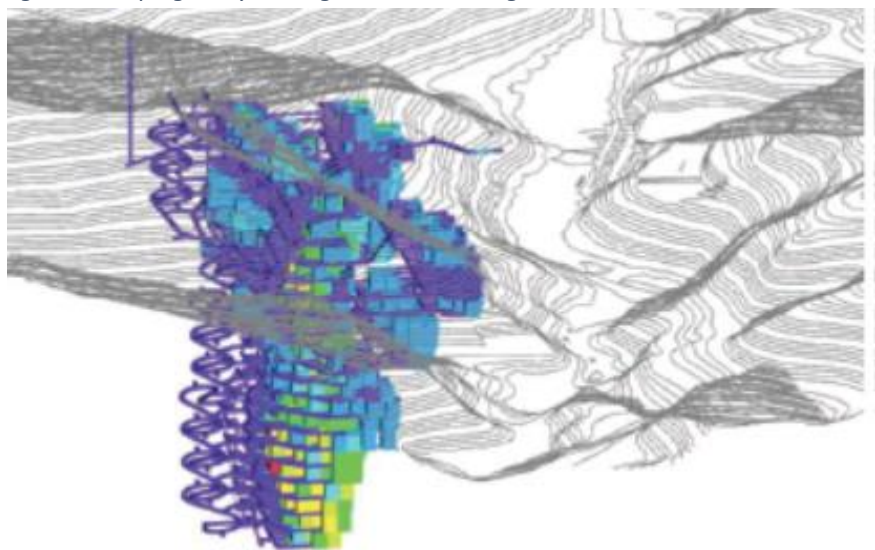
### *Sub-level open stoping preferred mining method*

Earlier this year Celsius declared a maiden resource estimate for MCB of 314Mt at 0.5% Cu and 0.2g/t Au, within which a high-grade core of 94Mt at 0.8% Cu and 0.3g/t Au was estimated at a higher copper cut-off grade. The optimised mine plan considered in the scoping study focuses on a 49Mt portion of the latter grading 0.85% Cu and 0.41 g/t Au, all of which is classified in the higher-confidence indicated category. This equates to just 28% of the project's total currently delineated resource by contained copper (or 56% of the high-grade core), suggesting there is future upside potential on mine-life extension and/or mine expansion opportunities.

Mining trade-off studies identified sub-level open stoping as the most technical and cost-efficient mining method given the wide zone of sub-vertical mineralisation, but also given geotechnical considerations. The study contemplates a nominal underground mining rate of 2.3Mt pa, with single decline access to a maximum depth of 600m below the proposed surface portal at RL 975.

The underground mining plan was scheduled to optimise cash flows in the first ten years of operations through preferential mining of the high-grade, sub-vertical core of the deposit above a copper equivalent grade of 0.8%. The decline will then be utilised in the latter years of the operation to access larger tonnages of medium-grade (>0.6% copper equivalent) material adjacent to the high-grade zone.

*Figure 1: Scoping study underground mine design*



Source: Celsius Resources

### *Conventional flotation processing technology envisaged*

The study contemplates a conventional process flow sheet for Cu-Au porphyries comprising: milling; rougher flotation; re-grind milling; and cleaner flotation.

Preliminary metallurgical test work undertaken to date has included comminution and sulphide flotation of representative samples (across a range of feed grades) selected from core from the recent drilling programme at MCB. This demonstrated the potential for overall copper and gold recoveries of 94% and 79% respectively across the sample feed grade range to a mixed copper-gold concentrate grading 25.8% Cu and 6.5g/t Au. The concentrate is expected to be free of deleterious elements and thus attractive to smelters.

The scoping study assumes a single processing train plant configuration with a maximum capacity feed rate of up to 2.4Mt pa. At the assumed average steady-state operating rate of 2.3Mt pa, the study predicts average annual production of copper contained in concentrate of 22kt during the first ten years of operations (when >1% Cu grade material is mined and processed), and 16kt over the 25-year life of operation. Gold-in-concentrate production is concluded to average 27koz pa and 19koz pa over the first ten years and full mine life respectively.

*Figure 2: MCB cleaner flotation test work results*

Sample	Feed grade		Flotation concentrate			
	Cu %	Au ppm	Cu grade %	Cu rec %	Au grade ppm	Au rec %
2A Composite	2.29	0.69	31.7	97.1	8.4	85.7
2B Composite	0.96	0.27	21.7	93.7	4.8	73.0
2C Composite	0.38	0.19	18.6	88.4	3.7	66.6
2D Composite	0.57	0.12	23.8	94.8	2.8	55.2
2E Composite	0.70	0.26	17.7	85.6	6.5	84.8
<b>Weighted avg</b>	<b>1.50</b>	<b>0.45</b>	<b>25.8</b>	<b>94.2</b>	<b>6.5</b>	<b>79.0</b>

*Source: Celsius Resources*

### *Sustainable tailings treatment and storage*

The sub-level open stoping mining method contemplated in the scoping study incorporates paste backfill of tailings. A tailings reclaim paste backfill plant will be installed to produce the required volume of backfill material, drawing upon dry-stacked tailings from a planned tailings filtration plant to be built adjacent. Acid mine drainage prediction testing of two composite tailings samples from the rougher flotation test work suggests that the tailings will not be acid-generating.

Developing a mining and processing operation at MCB will require the refurbishment of a section of the local electricity grid to provide power to the plant and amenities. Electrical transmission towers and supply lines installed for use by the nearby Batung Buhay mine in the 1990s are currently being utilised to provide power to local communities. Celsius believes that, once upgraded, this infrastructure could be utilised to supply MCB's estimated 12MW total power requirement.

A portion of the local road network will similarly need upgrading to provide a suitable access route for concentrate transport to the nearest port (Port Samalogue, 180km northwest of the MCB project area).

### *Economic outcomes and upside potential*

The scoping study estimates an initial capital expenditure requirement to construct the project of US\$253m, with a deemed accuracy level of +/- 30%. The single largest component is the process and paste plants and associated infrastructure, at

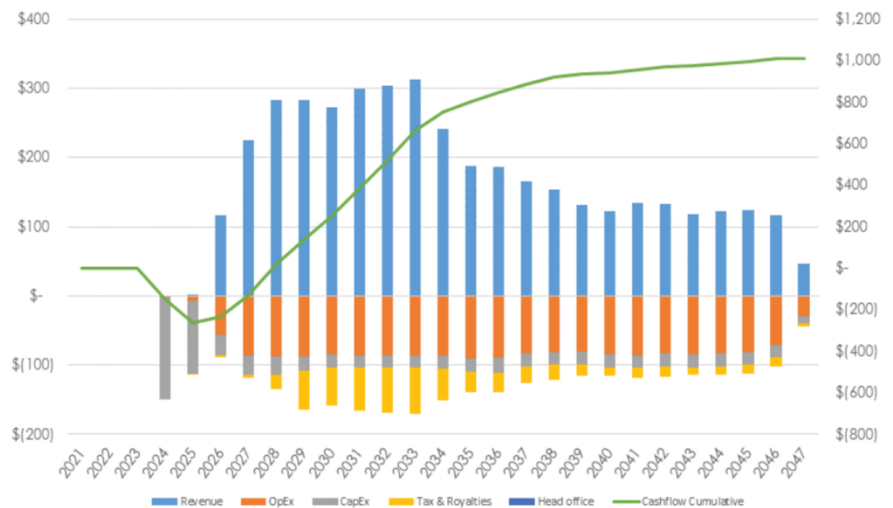
US\$148m. The two-stage mining plan described above optimises cash flow in the early years such that upfront capital is expected to be repaid in under three years at the company’s base-case commodity price assumptions (Figure 3).

Operating costs estimates have similarly been estimated to an accuracy level of +/- 30%, with metrics derived by desktop studies and industry cost comparisons (Celsius engaged independent technical consultants with specialisms in the key mining and processing disciplines). These input cost driver estimates yield a forecast C1 cash cost output of just US\$0.73/lb copper over the first ten years of operations, net of gold credits calculated at US\$1,695/oz. The average estimated C1 cash cost (net gold credits) across the full 25-year life of mine is US\$1.29/lb.

Applying base-case macro-economic assumptions of US\$4.00/lb copper, US\$1,695/oz gold and an 8% discount rate, the scoping study model generates pre- and post-tax NPV estimates of US\$618m and US\$464m respectively, and delivers a post-tax IRR of 31%.

Given the scoping study considers the exploitation of just over half of the contained copper in the currently-delineated MCB high-grade core resource (and under one third of the contained copper in the project’s global resource base delineated at a lower 0.2% copper cut-off) – and noting that significant potential remains to increase the resource given mineralisation is considered open both along strike and down dip of the current limits of drilling – we believe there could be upside potential to the scoping study economic outcomes over time through lifting of average grades at the back end of the mine life and/or mine extension/expansion opportunities. Further exploration drilling is planned, focussing on the potential to expand the high-grade portion of the resource.

Figure 3: MCB scoping study modelled cash flow generation profile (US\$m)



Source: Celsius Resources

**Sufficient confidence to advance to next stage of development study**

Given the robust technical and financial findings from the scoping study, the Celsius board has elected to immediately launch the necessary work streams to convert the current MCB exploration permit to a mining title, work which will include the preparation and submission of the necessary documents for the ‘Declaration of Mining Project Feasibility’ (DMPF) in line with Philippines regulatory requirements.

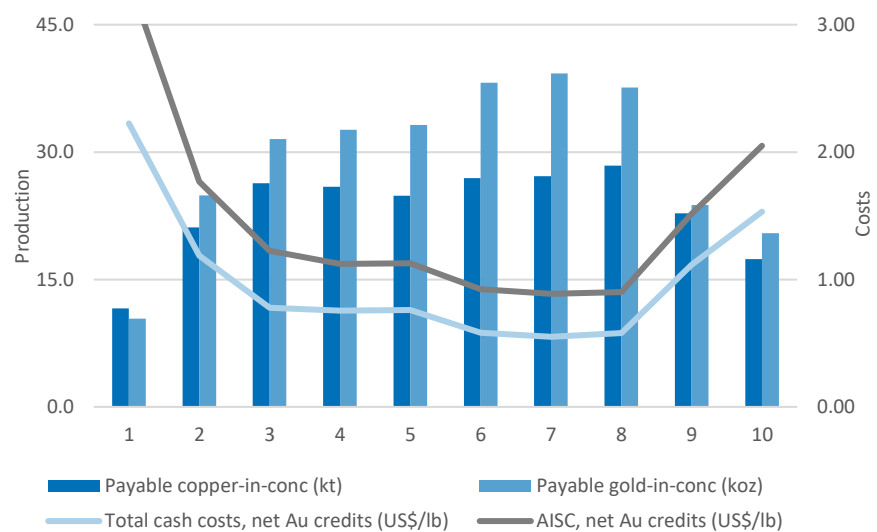
Furthermore, the company will immediately commence optimisation and trade off studies to augment some of the core elements of the scoping study findings, with a particular focus on mining and processing. Initial workstreams will include additional drilling to upgrade those portions of resource that are targeted for mining from indicated to measured status. Drilling will also provide sample material for more extensive metallurgical test work.

### Scoping study outcomes enhance our valuation model

We have updated our own cash flow model of MCB to incorporate the key operating and cost parameters concluded by the scoping study.

The result is an increase in our forecast copper and gold production rates over the first ten years of operations, as the scoping study demonstrates the potential for even higher grades to be mined and processed in the early years than we had previously assumed. Our forecast average C1 cash cost over the first ten years is similar to that concluded in the scoping study, and our average total cash cost estimate (i.e. C1 on-site operating cost items plus royalties and concentrate treatment and refining charges) over the same period is US\$0.80-0.85/lb, net of gold credits. We estimate that all-in sustaining cash costs (AISC) could average around US\$1.25/lb Cu over the first ten years (net of gold credits) and that the full life-of-mine average AISC could come in under US\$2.00/lb).

Figure 4: First ten years potential production and cost profile – ARC forecast



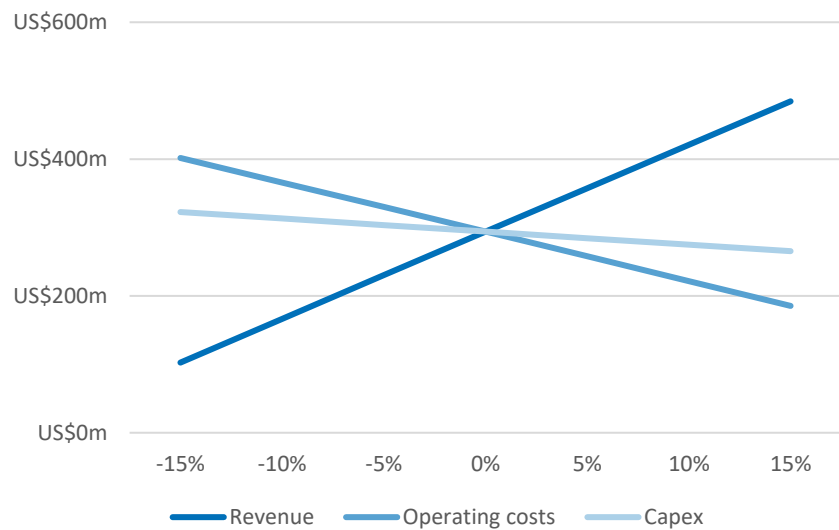
Source: ARC estimates

At our house commodity price assumptions of US\$3.50/lb copper and US\$1,650/oz gold, our model forecasts average operating EBITDA of over US\$140m pa over the first ten years, a margin of approximately 60%. We estimate a project level post-tax NPV<sub>8%</sub> of US\$294m and an IRR of 24%.

These outcomes rise to US\$558m and 33% respectively if we run our model at current spot copper (US\$4.35/lb) and gold (US\$1,780/oz) pricing.

Figure 5 illustrates the sensitivity of our MCB project NPV to revenue, opex and capex flex from our base-case assumptions.

Figure 5: MCP project NPV<sub>8%</sub> sensitivity – ARC estimates



Source: ARC estimates

### Shares trading at heavy discount to fundamental NPV-based valuation

Our NPV estimate would translate to A\$0.39 per Celsius share, approximately 17x the group's current share price. Scoping/prefeasibility stage equities typically trade at a steep discount to NPV reflecting the significant hurdles that must be overcome prior to the full assessed value being realised, most notably final feasibility, permitting, financing (which could be dilutive depending on equity levels and pricing) and construction. But we think Celsius' current share price is overly discounting risk – we suggest 0.25x NPV is fair today given the stage of the project's evolution.

After incorporating some nominal value for Celsius' main earlier-stage assets (the emerging Sagay project – also in the Philippines – and the Opuwo cobalt project in Namibia), we arrive at a risked company fair value target valuation of A\$0.12/share (Figure 6). This equates to 5x Celsius' current share price – we would expect the discount to our target valuation to narrow as Celsius progresses MCB through definitive feasibility study and permitting/licencing, and with further positive exploration news flow from across its asset base.

Longer term we see potential for Celsius' market value to evolve closer towards our un-risked full NAV as the MCB project is taken through financing, construction and, ultimately, into production.

The sensitivity tables in Figures 7 and 8 illustrate how our un-risked and risked company NAV estimate vary with discount rate and copper price assumption.

Figure 6: Sum-of-the-parts valuation

		Unrisked		Multiple x	Risked	
		US\$m	A\$/sh		US\$m	A\$/sh
MCP project, Philippines	NPV <sub>8%</sub>	294	0.39	0.25x	74	0.10
Sagay project, Philippines	nominal	10	0.01	1.00x	10	0.01
Opuwo project, Namibia	nominal	10	0.01	1.00x	10	0.01
<b>NAV</b>		<b>314</b>	<b>0.42</b>		<b>94</b>	<b>0.12</b>

Source: ARC estimates

Figure 7: Un-risked NAV (A\$/share) sensitivity to copper price and discount rate

		Copper price assumption				
		\$3.00/lb	\$3.25/lb	\$3.50/lb*	\$3.75/lb	\$4.00/lb
Discount rate	12%	0.12	0.19	0.26	0.33	0.40
	10%	0.17	0.25	0.33	0.41	0.49
	8%*	0.23	0.32	<b>0.42</b>	0.51	0.61
	6%	0.29	0.40	0.52	0.63	0.75
	4%	0.36	0.50	0.64	0.78	0.92

\*Valuation base case

Source: ARC estimates

Figure 8: Risked NAV (A\$/share) sensitivity to copper price and discount rate

		Copper price assumption				
		\$3.00/lb	\$3.25/lb	\$3.50/lb*	\$3.75/lb	\$4.00/lb
Discount rate	12%	0.05	0.07	0.09	0.10	0.12
	10%	0.06	0.08	0.10	0.12	0.14
	8%*	0.08	0.10	<b>0.12</b>	0.15	0.17
	6%	0.09	0.12	0.15	0.18	0.21
	4%	0.11	0.15	0.18	0.21	0.25

\*Valuation base case

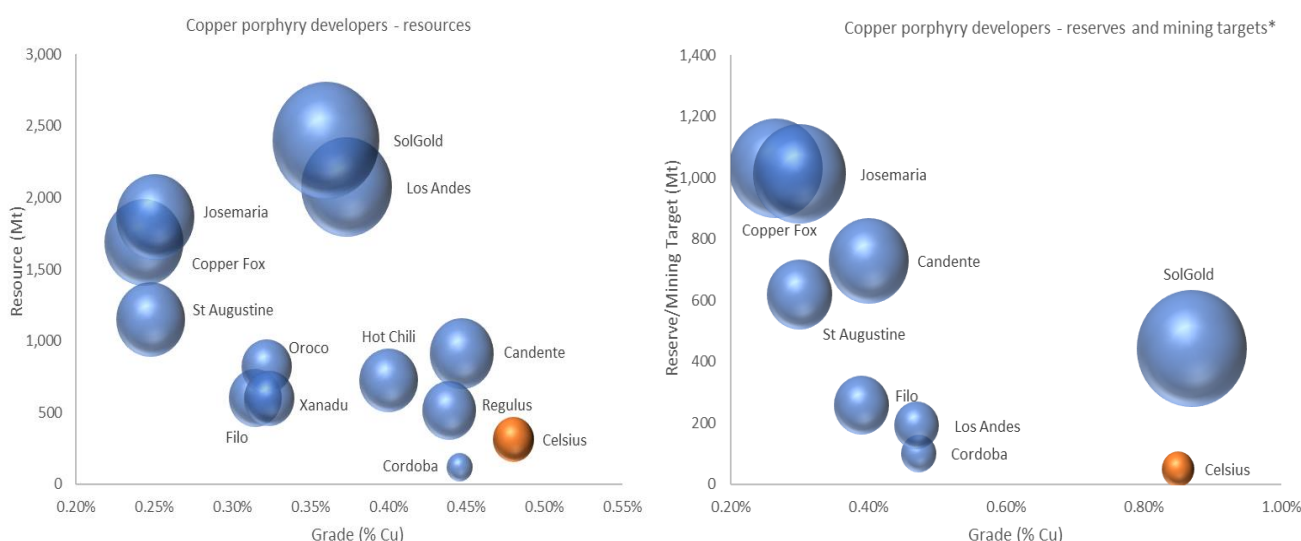
Source: ARC estimates

### Significantly undervalued relative to market peers

Celsius looks similarly undervalued when compared against porphyry project developer peers in the market. Trading at just US\$8/t of contained copper equivalent in MCB’s current global resource estimate, and at US\$25/t CuEq contained in the scoping study mining target, Celsius sits at a heavy discount to the peer group median EV/t resource and reserve metrics of US\$39/t and US\$81/t respectively.

Applying the latter peer median figures to MCB’s total resource and scoping study mining target respectively (and adjusting for our US\$20m of nominal value for Celsius’ other projects), would imply a peer-benchmarking valuation for Celsius of A\$0.16/share and A\$0.12/share respectively. These peer-based qualitative valuation outcomes corroborate the conclusions from our fundamental risked NPV analysis.

Figure 9: MCB ranked relative to porphyry developer peers by resources and mining targets\*



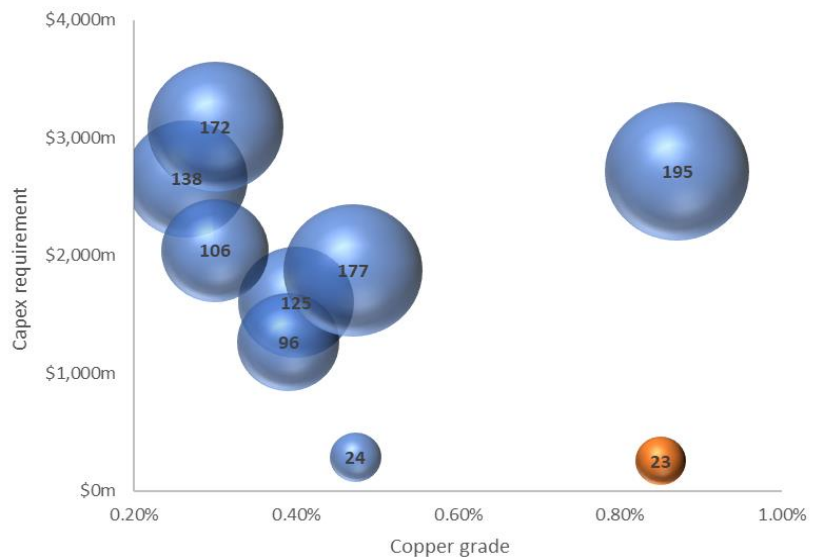
\*Includes non-reserve mining targets. Copper-equivalent values calculated at \$4.35/lb Cu and \$1,780/oz Au.

Source: Company reports, Bloomberg

In our view, MCB’s significantly above-average copper grades relative to other porphyry projects being assessed by juniors (Figure 9) gives it a significant advantage in terms of attracting construction finance. MCB’s upfront capex requirement (as estimated by the scoping study) is considerably lower than most undeveloped peer projects held by quoted junior companies (Figure 10), a function of its above-average grades which enable a sustainably low operating cost structure to be achieved at a more modest production scale than might typically expected of a porphyry project. And grade-driven strong early-year cash flows means that the upfront capital outlay could be recovered quickly, a key consideration for potential debt providers.

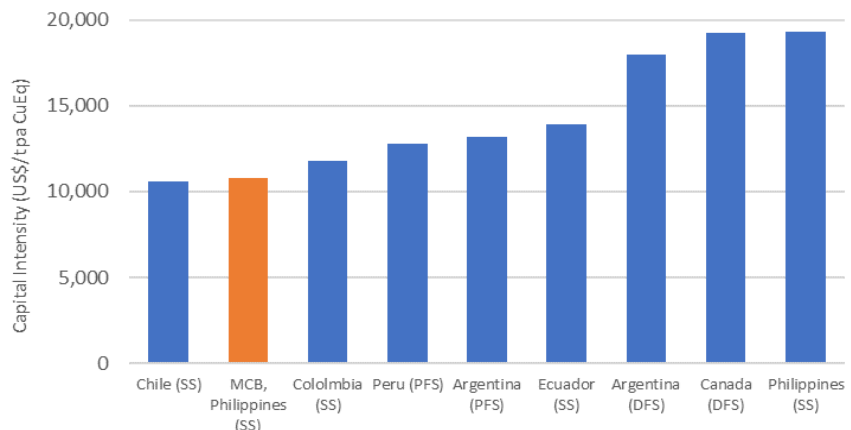
Most other porphyry projects in the market have much greater upfront capital requirements than MCB, and higher capital intensities (Figure 11). In contrast to Celsius and MCB, many of these projects may find it difficult to secure construction funding without the introduction of a larger partner.

Figure 10: MCB (in orange) ranked against peer copper porphyry projects by copper grade (x-axis), estimated development capital requirement (y-axis) and expected kt pa of copper equivalent\* production (bubble size)



\*CuEq production calculated at \$4.35/lb Cu, \$1,780/oz Au Source: Company presentations

Figure 11: MCB has a low capital intensity relative to undeveloped porphyry peers\*



\*CuEq production calculated at \$4.45/lb Cu, \$1,800/oz Au Source: Company presentations



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