

## COPPER

Current Spot US\$6,159/t  
US\$2.79/lb

### STOCKS IN FOCUS

Company	Jurisdiction
Minotaur Exploration	Queensland
Stavely Minerals	Western Victoria
Xanadu Mines	Mongolia
Hot Chili Limited	Chile
OZ Minerals	Global
Sandfire Resources	Global
Merdeka Copper Gold Tbk	Indonesia
Jiangxi Copper	Global
MMG Mining	Global

Explorers	Ticker	Mkt Cap
Minotaur Exploration	MEP	\$16m
Stavely Minerals	SVY	\$190m
Xanadu Mines	XAM	\$26m

Developer	Ticker	Mkt Cap
Hot Chili Limited	HCH	\$57m

Producers	Ticker	Mkt Cap
OZ Minerals	OZL	\$3.5b
Sandfire Resources	SFR	\$1.1b
Merdeka Tbk	MDKA	\$2.7b
Jiangxi Copper	358.HK	\$7.0b
MMG Ltd.	1208.HK	\$3.1b

LME Copper Spot Price (US\$/t)



Please refer to important disclosures at end of the report (from page 36)

Thursday, 23 January 2020

## Copper Sector

### Copper to lead the charge in 2020

Analysts | Jeff Sansom | Matthew Keane | Helen Lau

#### Quick Read

Argonaut regards copper as a key commodity pick into the 2020's based on a recovery of underlying demand from China, improving trade relations between China and the US, and a looming supply deficit based on low discovery rates of new deposits and declining mine grades. Copper remains an exploration and M&A focus for mid to large cap diversified miners, however the pool of advanced stage exploration/development assets is shallow. We reviewed ~70 copper companies to identify our key copper investment ideas.

#### An Emerging Thematic

**Positive lead indicators:** In an apparent easing of the global macroeconomic landscape Chinese manufacturing PMI displayed expansion in November (50.2) and December (50.2), Chinese business confidence outlook improved and the US/China signed a Phase One Trade Agreement. This culminated in a 32% yoy increase in copper concentrate imports and is supportive of our view of a strengthening long-term copper outlook.

**Heading into deep deficit by the early-2020's:** The green revolution is expected to drive increased penetration of less carbon intensive technologies. On average, renewable energy systems require 5x more copper vs conventional power generation and EVs require 3x more copper vs conventional vehicles. Copper demand is expected to outstrip supply from the early to mid-2020's with a deficit growing to ~8Mt by 2030.

**Exploration - running hard to stand still:** Maturing copper deposits battle grade decline and exploration expenditure is finding less copper at greater cost. Global exploration expenditure increased from US\$15.4b between 1990 and 2008 up to US\$25.8b from 2009 to 2019, however was only successful in identifying 102.4Mt of contained copper in 21 major discoveries, compared to 992.5Mt copper in 199 discoveries in the 19 years prior.

#### Key Picks

##### Explorers

**Minotaur Exploration (MEP:ASX):** SPEC BUY;  
**Stavely Minerals (SVY:ASX):** SPEC BUY;  
**Xanadu Mines (XAN:ASX):** SPEC BUY.

##### Developers

**Hot Chili Limited (HCH:ASX):** SPEC BUY.

##### Producers

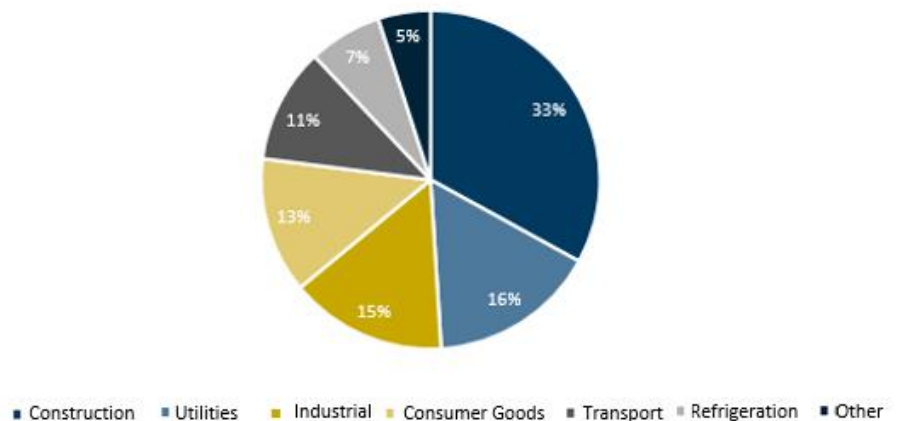
**OZ Minerals (OZL:ASX):** BUY, \$11.26 TP;  
**Merdeka Copper Gold Tbk (MDKA:ID):** BUY, IR 1,257 TP;  
**Sandfire Resources (SFR:ASX):** BUY, \$7.50 TP;  
**Jiangxi Copper (358:HK):** BUY, HK\$12.70 TP;  
**MMG Mining (1208:HK):** BUY, HK\$2.40 TP.

## Construction/manufacturing sectors drive copper demand...

### Dr Copper

Given its appealing physical and chemical properties, copper continues to be one of the most highly consumed non-ferrous metals with the primary demand driver related to its conductivity properties used in electrical infrastructure. In 2019 total copper consumption was ~25Mt.

Figure 1. Copper demand by source



Source: CRU Group

## ...giving copper the nickname “Dr Copper” as it ‘predicts’ economic cycles.

Copper is colloquially referred to as Dr Copper because of its ability to ‘predict’ the turning points of the global economy, with copper market activity used as a lead indicator for global economic cycles. A healthy and growing economy will generally exhibit increased construction and manufacturing activity, both of which demand significant volumes of industrial metals, including copper. This increased demand is generally associated with an increased copper price, however, in a weaker or slowing economy, construction and manufacturing activity is subdued resulting in lower copper demand and a depressed copper price.

## Copper Demand

According to CRU Group, over the past 5,000 years 550Mt of copper has been produced, however to keep up with forecast demand, we will need to produce the same volume of copper in the next 25 years.

**2019 provided a challenging global backdrop but...**

### Easing of geopolitical tensions to support copper demand growth

Last year was challenging for the copper market, characterised by a global macroeconomic backdrop which included escalating trade tensions between the US and China which suppressed copper demand and arguably dampened global economic growth.

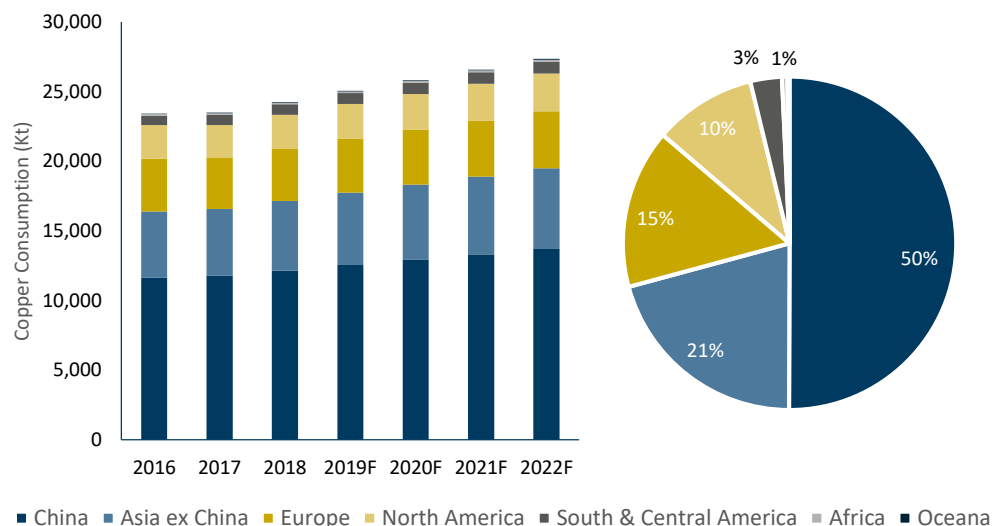
This year started off positively with some major underlying macro fundamentals showing improvements:

- The US and China signed a Phase One trade deal to lower existing tariffs and suspended new ones, providing improved trade conditions supportive of global economic growth;
- China eased monetary policy by reducing the Required Reserve Ratio (RRR), signalling that the Chinese Central Bank intends to support the slowing economy; and
- Expansion of China's official Manufacturing PMI data during the last quarter of 2019 indicated growth in the manufacturing sector, signalling economic stabilization.

**...easing macro conditions indicate a strengthening copper market.**

This favourable backdrop and continued downstream copper demand recovery in late 2019 underpins our positive view on copper in the short to mid-term and we believe that 2020 should show a progressive strengthening of the copper market.

*Figure 2. Global copper demand forecasts and historic average copper consumption by region*



Source: varied sources including Bloomberg Intelligence

## **Our optimism is driven by Chinese lead indicators.**

### **Near term optimism from China lead indicators**

China's import and export growth on a US dollar basis increased 16.3% and 7.6% year on year (yoy) in December, much stronger than prior month and respective market estimates of 9.6% and 2.9%. Imports and export growth was primarily driven by:

- Consecutive expansion of official manufacturing PMI in November (50.2) and December (50.2);
- Increased business confidence outlook among exporters after the announcement of signing Phase One Trade Agreement between the US and China; and
- Increased imports from the US.

The strong recovery in imports and exports through December is a turnaround for market sentiment, which eases concerns about a possible economic slow-down in China in 2020. This positive recovery of imports and exports is supportive of Chinese GDP growth of +6% in 2020 compared to current market consensus of <6%.

## **An expanding manufacturing sector...**

China's PMI expansion at the end of 2019 was driven by a turnaround in the new orders subindex and strong expansion in the output subindex of 52.6 and 53.2 for November and December respectively, leading to stronger increased commodity imports. Most notably copper concentrate imports in December 2019 were up 31.9% yoy.

During December, Chinese exports of consumer products were strong with exports of toys, plastic products and furniture increasing 26.1%, 22.7% and 14.2% yoy respectively. A survey conducted by Chinese Customs in November / December 2019 indicates that the majority of the 3,000 exporters surveyed expressed an optimistic outlook for exports in the coming quarter.

## **...strong import growth driven by power and vehicle sectors...**

### **Imported Copper Momentum May Persist**

Imports of unwrought copper in December 2019 increased 10% month on month (mom) and 23% yoy to 527kt on the back of:

- Downstream demand recovery;
- A shortage of copper scrap; and
- Arbitrage profits between LME and SHFE.

We expect import momentum, which started in the second half of 2019, to continue throughout 2020 and that an improved demand outlook will be predominantly driven by the power and automobile sectors.

## **...softer TC/RCs and expanded Chinese smelter capacity...**

Chinese copper concentrate imports in December 2019 were down 11% mom but up 32% yoy. Softer imports were primarily due to weaker spot TC/RCs which were down to US\$57/t compared to US\$59/t in November. Year on year, spot TC/RCs were down 33% however the increased volume of copper concentrate reflected China's expanded smelting capacity and shortage of scrap metal. We expect imports of copper concentrate to China to continue to strengthen through 2020 amid a low TC/RC environment and as Chinese refining/smeltering demand continues to remain strong, potentially exceeding global concentrate supplies.

## **...indicate Chinese demand could exceed supply in the near term.**

## Renewable technologies are more copper intensive...

### Renewable Energy thematic accelerating demand growth

Given the momentum and traction that the renewable energy thematic has generated, the world now looks set for a structural demand shift for copper as we progressively transition towards a less carbon intensive future with greater penetration of electric vehicles (EVs) and renewable energy systems. On average, renewable energy systems require five times more copper compared to conventional power generation, and EVs require three times more copper compared to conventional vehicles.

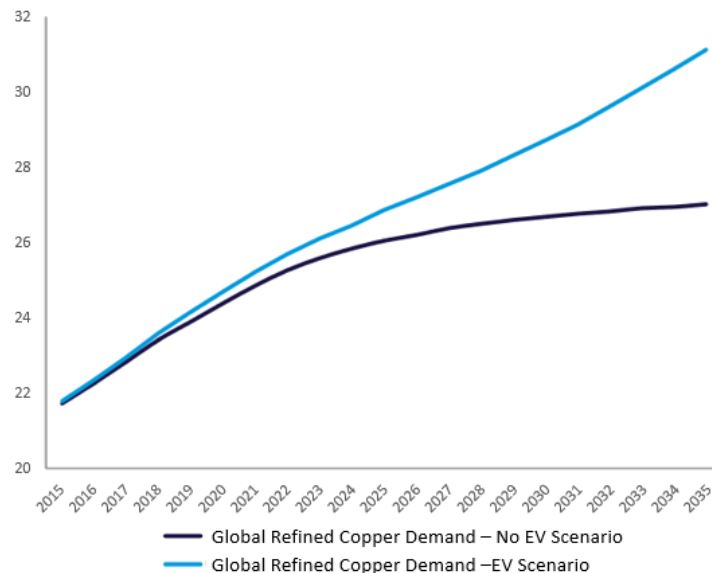
In addition to the copper demand for EV's, every EV will require a charging port and charging infrastructure. Copper demand for charging ports alone could reach an additional ~500ktpa copper by 2027. To put the EV copper demand scenario into simple metrics, the International Copper Alliance and the Copper Development Association forecasts the following copper intensity:

- Flywheel for pumped hydroelectricity: ~0.3t Cu / MW
- Wind turbines: ~3.6t Cu / MW
- Solar panels: 4-5t Cu / MW
- Conventional car: 50lb Cu / vehicle
- Hybrid Vehicles: 85lb Cu / vehicle
- Battery Electric Vehicle: 183lb Cu / vehicle
- Hybrid Bus: 198lb Cu / vehicle
- Battery Electric Bus: 811lb Cu / vehicle
- EV Charging port: 18lb Cu / charging port

In late 2019, China announced an upward revision to its target for EVs to 25% of total vehicle sales by 2025. To achieve this, we expect that EV sales in China will increase by 40% in 2020 and then to 32% from 2021 to 2025. Together with the expected increase in global growth in EV sales and the subsequent increase of supporting infrastructure (charging stations), the outlook for copper demand appears strong with a forecast cumulative average growth rates (CAGR) of demand in excess of 3% pa out to 2030 versus 1-2% over the past decade.

...driving strong forecast copper demand growth of over 3% pa.

Figure 3. Global refined copper demand under EV and no EV scenarios (Mt Cu)



Source: CRU Group

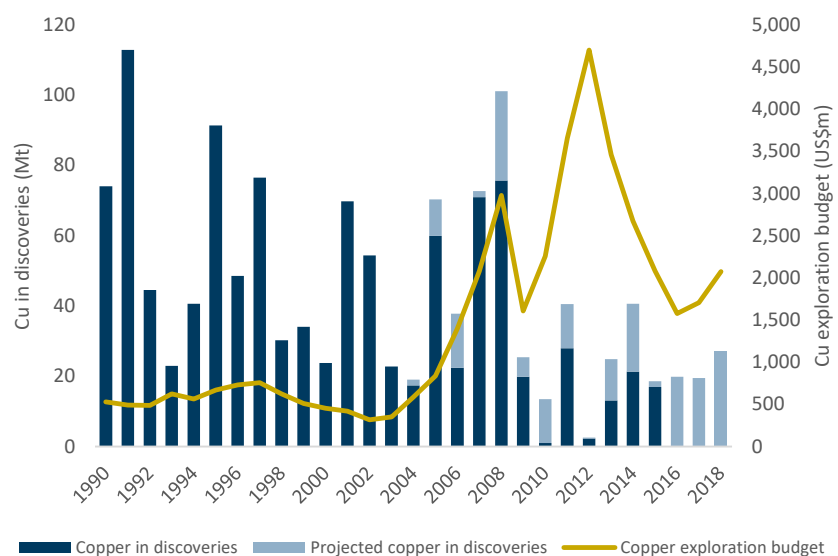
## Copper Supply

**There have been no significant discoveries in the past decade.**

### Exploration more challenging, costing more to find less

Copper exploration expenditure has increased by 68% from US\$15.4b between 1990 and 2008 up to US\$25.8b from 2009 to 2019. However, this increased exploration expenditure has only been successful in identifying 102.4Mt of contained copper in 21 major discoveries, compared to 992.5Mt copper in 199 discoveries in the 19 years prior. This implies that the lower discovery rates of the last decade will impact the projects available for future development.

*Figure 4. Major copper discoveries and copper exploration budgets (1990 to 2018)*

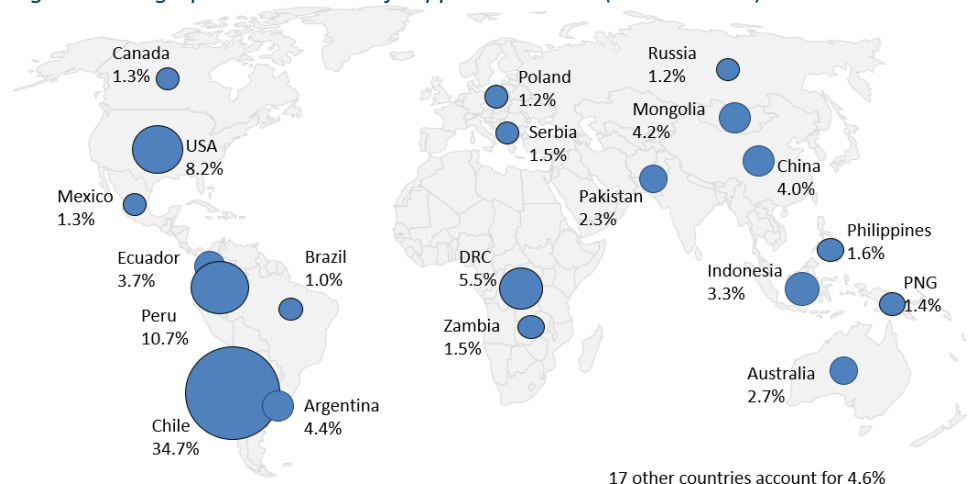


Source: S&P Global Market Intelligence

**South America has remained the most prospective jurisdiction for copper discoveries...**

The outcome of this exploration expenditure is that globally, there are approximately 35 years of copper in Reserves (at current consumption rates). South America remains the most prolific for new copper discoveries accounting for approximately 55% of new copper discoveries between 1990 and 2018.

*Figure 5. Geographic distribution of copper discoveries (1990 to 2018)*



Source: S&P Global Market Intelligence

**...but grade decline continues to weigh heavily on all producers.**



**A solid pipeline of near-term projects...**

**... the longer term pipeline is less appealing and more complex.**

**Grade decline continues to impact mature operations...**

**...as the desirable open pit sulphide ore becomes exhausted...**

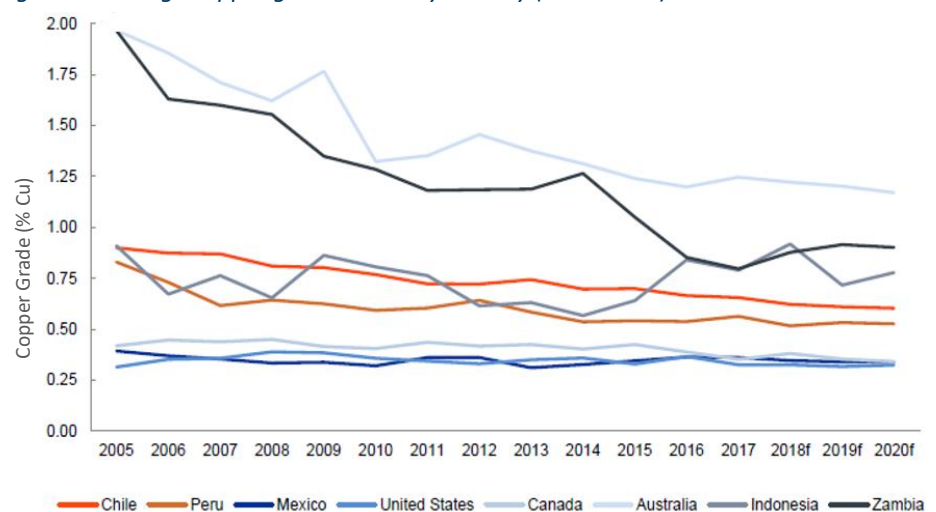
While there is a solid pipeline of new projects and mine expansion projects, the grade of existing and new supply is diminishing. In addition, the lead time from discovery to development for copper projects is expanding, with the highest contribution of new copper supply from IOCG or porphyry deposit. These deposits are generally exploited by large scale, low grade operations (increasingly underground block cave or sub-level cave) which take 10-15 years to develop. Additionally, exploration activities are entering higher risk jurisdictions as “low-hanging fruit”, or copper reserves discovered in safer jurisdictions, are suffering from grade decline and are becoming exhausted.

#### Grade decline continues to weigh on miners

In 2018, Chile and Peru were the highest copper producing countries in the world delivering approximately 40% of global output. On a global scale, ~62% of total ore mined was sourced from open pit sulphide operations, 21% was mined from open pit oxide operations and 9% from underground sulphide operations.

Given the long history of copper mining, global copper grades have been in decline, and on average, have reduced by 1.8% each year between 2005 and 2017 from an average of 0.79% down to 0.59%. This grade decline is not centred around any single jurisdiction and all eight of the largest copper producing countries continue to record lower copper grades.

*Figure 6. Average copper grade mined by country (2005-2020)*

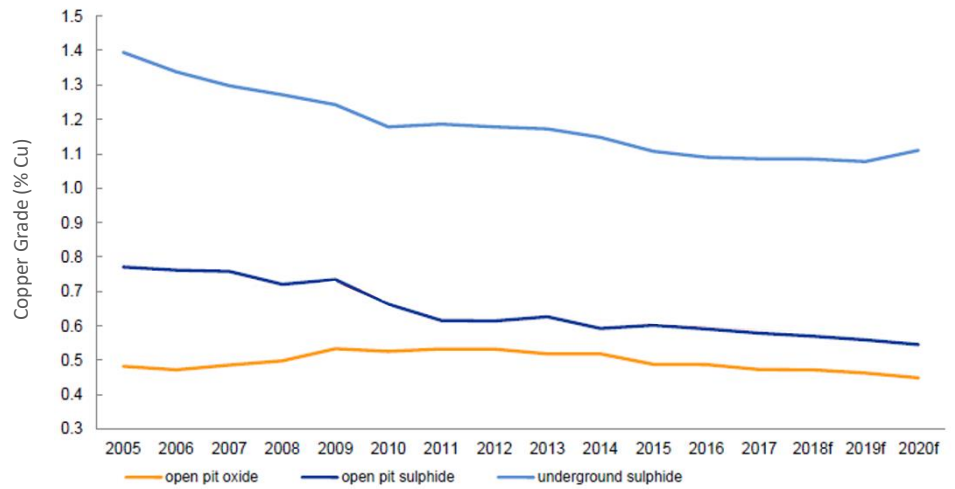


Source: AME Group

At a more granular view, reserves of the most ‘desirable’ source, namely open pit sulphides, have reduced by an average of 2.8% pa from 0.77% down to 0.58%. Reserves of open pit oxide ore have remained relatively flat at 0.48% and underground sulphide ore grades have reduced on average by 2.1% pa. from 1.39% down to 1.09% Cu.

Current examples of large, open pit sulphide mines which continue to struggle against grade decline include BHP Billiton Spence and Escondida mines and Freeport McMoran’s Grasberg mine.

Figure 7. Average copper grade mined by source (2005-2020)



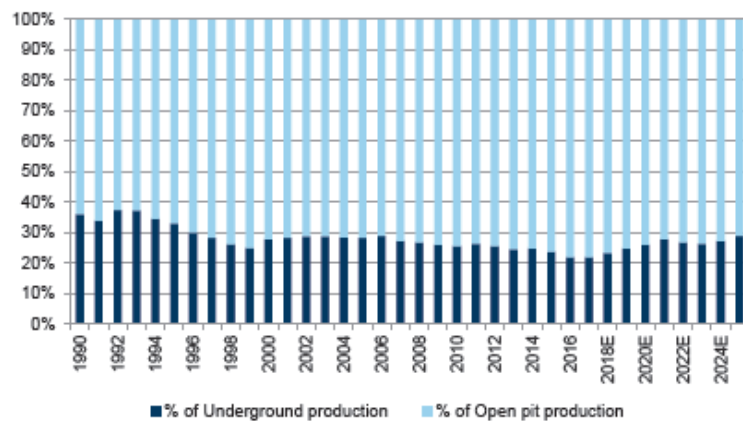
Source: AME Group

...we expect a shift toward more complex, underground mines...

#### Supply risk as we move to more complex orebodies and challenging jurisdictions

Given the grade decline profile of open-pit mines, we expect that copper will be increasingly sourced from more complex underground mines, with current estimates predicting an increase from ~22% of total current production to over 30% by 2027. Examples of this include the transition of the Chuquicamata, Grasberg and Oyu Tolgoi open pit mines to more technically complex, higher grade underground block cave operations.

Figure 8. Global copper production by source (%)



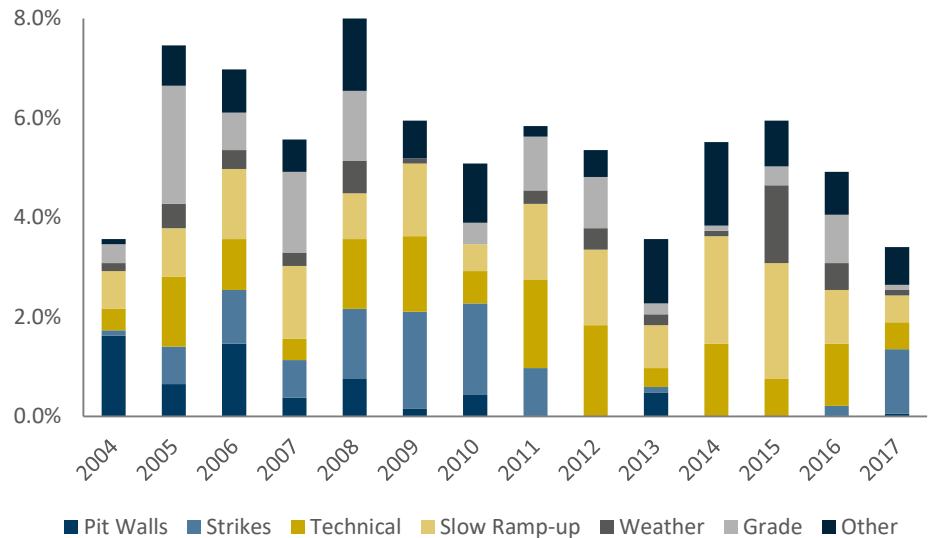
Source: Wood Mackenzie

... in challenging jurisdictions...

With the expected shift to underground mining operations in more challenging and remote jurisdictions and increasingly complex geological conditions, we see supply disruptions could continue to play a significant role in the supply of refined copper. Historically, technical and ramp-up issues have been the primary supply constraint, with labour and weather issues also impacting supply.



Figure 9. Global copper supply disruptions (as a % of global supply) 2004-2017

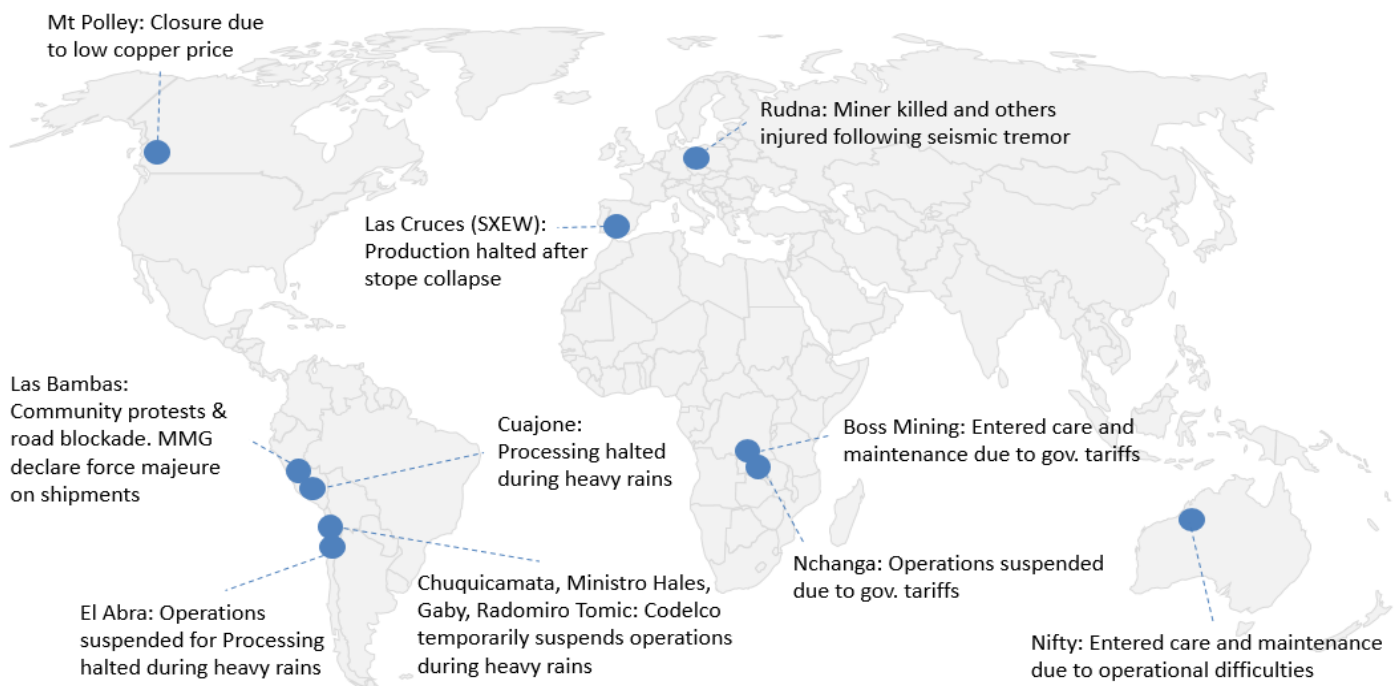


Source: Wood Mackenzie

**...with much of forecast future production potentially at risk.**

A study in the Journal of Cleaner Production, entitled “Re-thinking complex orebodies: Consequences of the future world supply of copper” found that of the 308 largest undeveloped copper orebodies, ~96% of potential future copper supply is subject to multiple and concurrent risks. These risks include access to reliable power infrastructure, access to reliable high quality water sources, grade, complexity/significant variability within the orebody as well as a number of other environmental, social and governance (ESG) risks, all of which suggest potential downside risks to future copper supply.

Figure 10. Disruptions to copper production in 2019



Source: CRU Group

## Implications for the Copper Market

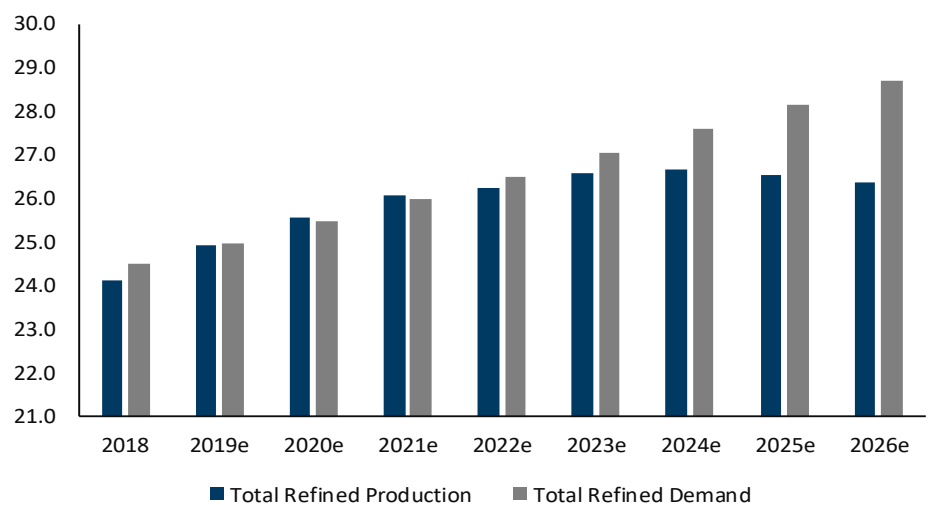
**Copper demand is expected to outstrip supply in 2022...**

**... with a forecast supply deficit of up to 8Mt in 2030.**

The above forecast growth in copper demand is likely to be exacerbated by a decline of copper supply (total production including scrap), which is indicated to slow out to 2022 before moving into decline from 2023 onwards.

As a result, industry commentators have forecast a supply deficit in the copper market (both scrap and refined copper) in the mid to early 2020's potentially reaching a deficit of 2.5Mt by 2026 and as high as 8.0Mt by 2030.

*Figure 11. Global total refined copper (incl. scrap) supply vs total copper demand (Mt Cu)*

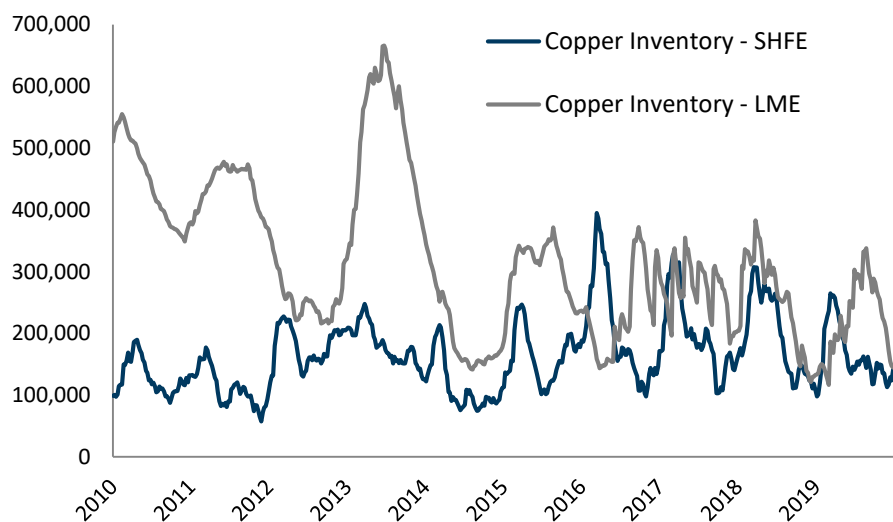


Source: Bloomberg Intelligence / International Copper Study Group (ICSG)

**This supply/demand imbalance is expected to have a positive impact on copper price...**

Collectively, London Metals Exchange (LME) and Shanghai Futures Exchange (SHFE) copper inventories tracked up through the first half of 2019, but then moved into decline in the second half of the year. On current consumption rates of ~24.4Mtpa, the exchange inventories equate to about six days' worth of supply, roughly where inventories have hovered since 2014.

*Figure 12. LME and SHFE copper inventories (tonnes)*

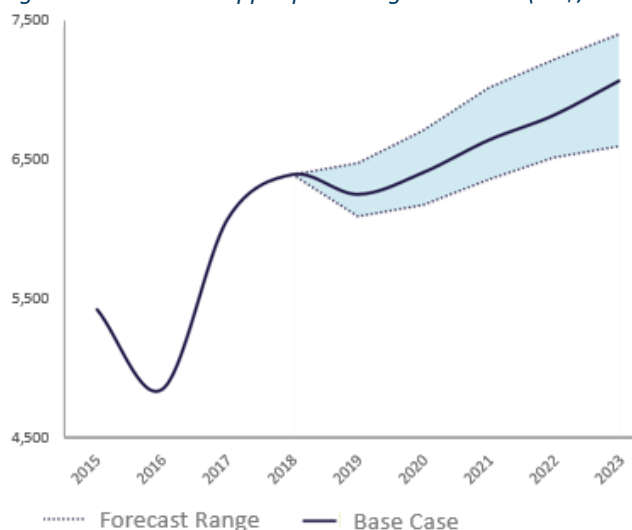


Source: Bloomberg

**This supply/demand imbalance is likely to impact the copper price...**

Given the forecast tightening of the copper market, Argonaut forecasts a modest increase in the copper price to US\$6,600/t (US\$3.00/lb) in 2020.

*Figure 13. Forecast copper price range scenarios (US\$/t LME 3m price)*



Source: CRU Group

**...with consensus estimates of US\$3.26/lb in 2025.**

Taking a longer view, consensus forecasts see copper price progressively strengthening to US\$7,413/t or US\$3.26/lb in 2025 while the World Bank is more conservative and expects the copper price to improve towards a long term average of US\$7,000 per tonne, or US\$3.18/lb from 2026.

## Argonaut copper price forecast

Argonaut has updated its pricing and foreign exchange assumptions.

*Table 1: Argonaut forecast assumptions*

Pricing Assumptions										
Base Metals	Unit	H1 2020	H2 2020	2021	2022	2023	2024	2025	LT	Current Spot
New	US\$/lb	2.90	3.10	3.15	3.25	3.25	3.50	3.25	3.00	2.69
Previous	US\$/lb	2.95	3.00	3.00	3.00	3.00	3.00	3.00	3.00	
Change	%	-2%	3%	5%	8%	8%	17%	8%	0%	
Consensus	US\$/lb	2.81	2.81	2.91	3.03	3.08	3.26	3.25	3.00	
FX Assumptions										
AUD/USD	Unit	H1 2020	H2 2020	2021	2022	2023	2024	2025	LT	Current Spot
New	#	0.69	0.70	0.72	0.72	0.72	0.72	0.72	0.72	0.69
Previous	#	0.70	0.72	0.72	0.72	0.72	0.72	0.72	0.72	
Change	%	-1%	-3%	0%	0%	0%	0%	0%	0%	
Consensus	#	0.69	0.69	0.70	0.70	0.70	0.71	0.71	0.71	
USD/CNY	Unit	H1 2020	H2 2020	2021	2022	2023	2024	2025	LT	Current Spot
New	#	6.85	6.80	6.70	6.60	6.60	6.60	6.60	6.60	6.88
Previous	#	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	
Change	%	5%	5%	3%	2%	2%	2%	2%	2%	

**Argonaut has updated its copper price and FX assumptions...**

**We expect copper price to be stronger for longer**

In 2020, Argonaut expects Chinese demand for copper to increase and to persist through until 2025. We expect supply to remain constrained during this time with the copper price increasing to US\$3.50 in 2024, up 17% on previous estimates, with prices moderating in 2025 to US\$3.25 (up 8% on Argonaut previous estimates) and then back to a long term average of US\$3.00.

**...and the AUD to weaken in 2020 but remain flat at US\$0.72 in the long-term.**

Argonaut has revised commodity price assumptions, expecting the Australian dollar to be weaker against the US dollar in 2020 but strengthening to our original estimates of US\$0.72 from 2021 forward.

## Our thoughts on Copper exposure

**With a bullish view on copper we look for investment opportunities.**

With improvements in copper market lead indicators and with many forecasting a strengthening copper price through 2020 and beyond, it appears that we could be seeing the copper thematic begin to play out. We look to the Australian market for ideas to gain copper exposure.

**We looked at ~70 listed copper companies...**

Our research has identified 67 copper companies listed on the Australian Stock Exchange. Of this, 50 are explorers, 10 are developers and 7 are producers. The full list of companies we identified is included in Appendix 1.

**...ranging from early stage exploration companies...**

### Copper explorers – Key picks

Of the explorers, we see a large number of companies engaged in early stage exploration activities, and as such it is difficult to get read through to the potential prospects of each given many are operating within the same highly prospective regions. As a result, we look at those companies who have achieved farm-in and / or Joint Venture (JV) agreements with larger producers. These agreements generally ensure certainty around cash flows for exploration activities.

Partnership from a mid to large cap miner can also provide improved corporate governance and more refined exploration techniques. These factors offer significant advantages versus those juniors who must brave it alone and compete for capital in a current market that is relatively unsupportive for junior exploration companies. Additionally, we see these JV's as a form of early stage recognition of the quality of the exploration assets and whilst not indicative of success, provides an added level of due diligence for the projects. Outside of this, we look at companies that hold advanced exploration targets and those that we believe will continue to deliver positive news flow related to exploration progress. Our key picks include Minotaur Exploration (MEP), Stavely Minerals (SVY) and Xanadu Mines (XAM).

### Copper developers – Key pick

Looking to the developers, we exclude those that are under suspension or have challenges related to the asset (judicial reviews, deep mineralisation or significant development capital requirements). Hot Chili (HCH) is our key pick, holding a potential future tier-1 producing asset that could fit nicely into any major copper producers' portfolio of assets.

**...to mature copper producers and discuss our top picks below.**

### Copper producers – Key picks

For the producers, again, we exclude any operations that are under suspension and look to copper producers that have a track record of generating strong cash flows while holding a pipeline of growth projects to potentially sustain and improve operations through the forecast stronger copper pricing environment. Our key picks include OZ Minerals (OZL), Sandfire Resources (SFR), Merdeka Copper Gold Tbk (MDKA:ID), Jiangxi Copper (358:HK) and MMG Mining (1208:HK).

More detail on our top picks are shown on the following pages.

## SPEC BUY

Current Price \$0.045  
Market Cap \$16.4m

Thursday, 23 January 2020

## Minotaur Exploration (MEP)

### Taking Jericho by the horns

Analysts | Matthew Keane | Jeff Sansom

#### Quick Read

Minotaur (MEP) has three significant farm-in and Joint Venture agreements with OZ Limited (OZL) for three areas in Cloncurry, with significant commitments for exploration expenditure over the coming years. Resource drilling at the Jericho JV is expected in Q2 2020, Eloise exploration activities and land access arrangements are progressing and project generation within the Cloncurry Alliance area is underway.

#### Key Points

**JV agreements provide exploration certainty:** Minotaur holds three JV's with OZL for exploration tenements surrounding the historical Eloise copper-gold mine in Cloncurry, Queensland. The project areas include, Jericho, Eloise and the Cloncurry Alliance.

**The Jericho Project is free-carried to production:** Following discovery of high grade copper mineralisation at the Jericho project, under a structured JV (80% OZL), Minotaur is free-carried (by OZL) through to production and until positive cash flow is achieved. OZL has commenced underground mine development studies and finalising block models. Metallurgical test results indicate a potentially clean, high quality copper-gold concentrate and further drilling at Jericho will be subject to completion of mining studies by OZL.

**JV commitments for the Eloise Project:** OZL acquired a 70% interest in 13 Eloise licences (surrounding the historical Eloise copper-gold mine) for A\$10m exploration expenditure. OZL committed a further A\$3m exploration expenditure over 2 years. In addition, Sandfire Resources (SFR) holds 60% interest in two Eloise exploration licences.

**The Cloncurry Alliance:** Minotaur and OZL have also entered into the "Cloncurry Alliance" with the aim of collaborating to identify prospects within a 24,000km<sup>2</sup> area to the south east of Cloncurry. OZL will fund A\$1m over 2 years for project generation activities and can earn up to 70% of each target following A\$4m of exploration expenditure over 3 years.

**Windsor acquisition provides further opportunity:** In November 2019, Minotaur announced the acquisition of the Windsor Project, located in Charters Towers region in Queensland with highly encouraging historical and current polymetallic resources within the district. The Agreement terms include consideration of \$250,000 and \$150,000 of Minotaur scrip for 100% of the Project.

#### Our View

2020 resource definition (Jericho) and exploration activities (Eloise and Cloncurry Alliance) are fully funded through the OZL JV and we expect that Minotaur will focus on estimating a JORC compliant resource at Jericho. With a strong pipeline of exploration results expected during 2020 we see room for growth in the share price.

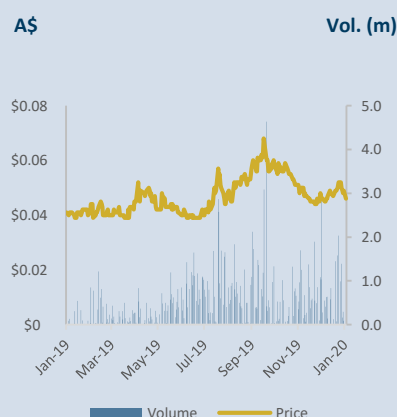
Ticker: MEP  
Sector: Metals & Mining  
Shares on issue (m): 364.4  
Market Cap (m): 16.4  
Net Cash (\$m): 3.0  
Enterprise Value (\$m): 13.4

52 Wk High / Low: \$0.08 \$0.04  
12m Av Daily Vol (m): 0.55

**Project/s** **Stage**  
Jericho Adv. Explor.  
Eloise Early Explor.  
Cloncurry Alliance Target Generation

**Directors:**  
Roger Higgins Non-Executive Chairman  
Andrew Woskett Managing Director  
Antonio Belperio Executive Director  
George McKenzie Non-Executive Director

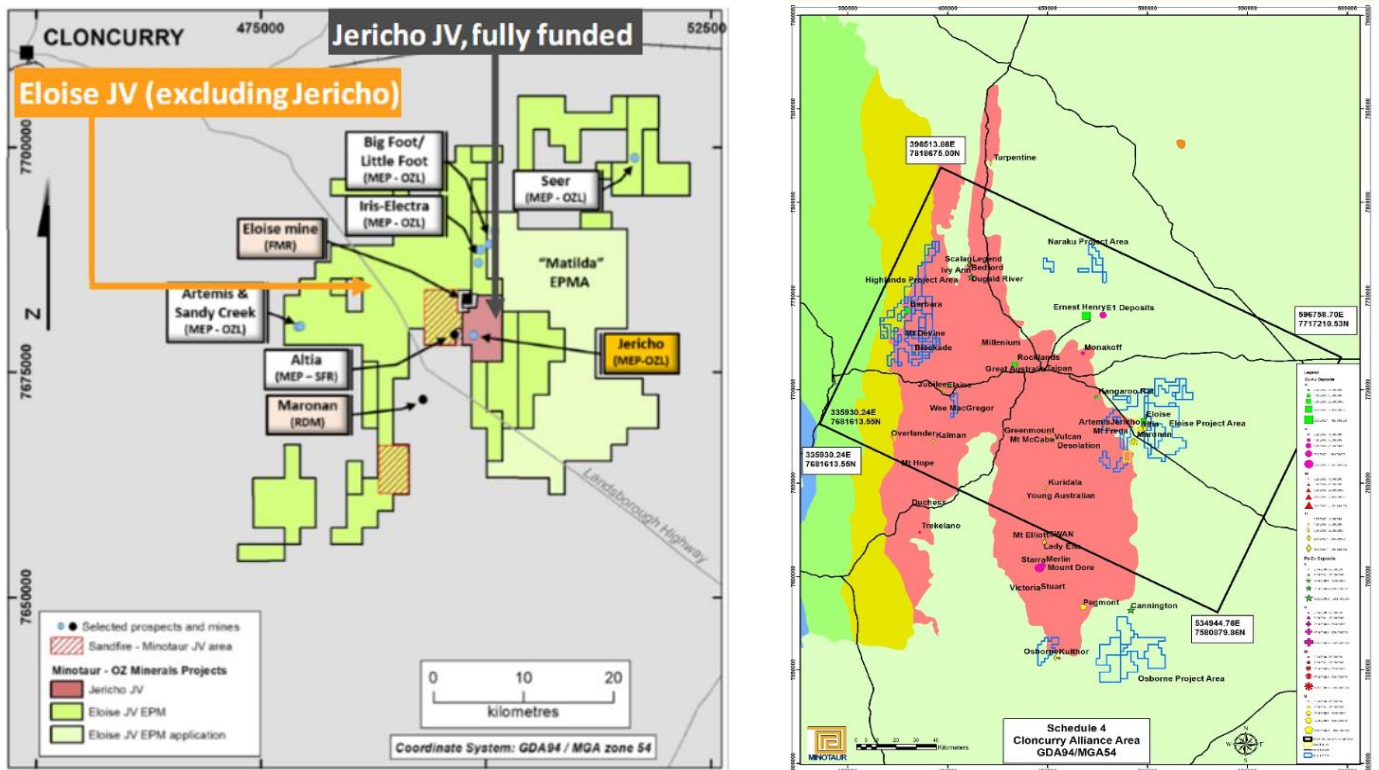
Share Price and Volume Graph



Please refer to important disclosures at end of the report (from page 36)



Figure 1: Location of Jericho and Eloise JV's and the Cloncurry Alliance area



Source: MEP

Figure 2: Expected H1 2020 Work Plan

Asset	Activity	Work plan	Dec	Q1	Q2	\$
Jericho JV	Resource drilling	Underground mining scenarios, decisions on next activities				OZL
		Next phase drilling (after Wet season, subject to OZL decision)				
Eloise JV	Readying for Drilling	Land Access arrangements				OZL
		Ground EM over Big Foot/Little Foot, drilling at Seer				
Cloncurry Alliance	Opportunity identification	New project selection; acquisition				OZL
Windsor	Acquisition & Target generation	Complete tenement acquisition process				MEP
		3D IP survey over outcrop at Warrawee prospect				
		Drill test Warrawee 3D IP response				
Poochera	Commercialisation	Andromeda - Permitting & pre-feasibility study				ADN

Source: MEP



## SPEC BUY

Current Price \$0.89  
Market Cap \$197m

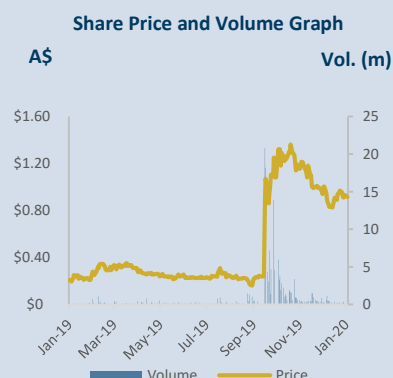
Ticker: SVY  
Sector: Metals & Mining  
Shares on issue (m): 213.8  
Market Cap (\$m): 190  
Net Cash (\$m): 2.9  
Enterprise Value (\$m): 187

52 Wk High / Low: \$0.05 \$0.01  
12m Av Daily Vol (m): 4.05

52 Wk High / Low: \$1.42 \$0.15  
12m Av Daily Vol (m): 0.65

**Project/s** **Stage**  
Stavely Exploration  
Ararat Exploration

**Directors:**  
Christopher Cairns Executive Chairman & MD  
Jennifer Murphy Executive Director  
Peter Ironside Non-Executive Director  
Amanda Sparks Non-Executive Director



Please refer to important disclosures at end of the report (from page 36)

Thursday, 23 January 2020

## Stavely Minerals (SVY)

### Thursday can be the best day of the week

Analysts | Matthew Keane | Jeff Sansom

#### Quick Read

Following exploration activity through 2019, Stavely (SVY) was successful in discovering high-grade copper lodes, intercepting up to 40% copper, within the Thursday Gossan prospect. This discovery compliments the proximal wide, lower-grade porphyry style copper mineralisation. Further drilling should continue to identify additional high-grade copper mineralisation.

#### Key Points

**Established resources is a great starting point:** Located in western Victoria, the Stavely and Ararat projects both host JORC compliant resources. The Ararat Project is a VMS style deposit with an inferred resource of 1.3Mt at 2.0% Cu for 30Kt contained copper. The Stavely Project holds both porphyry style mineralisation with a chalcocite-enriched blanket lode style of mineralisation. The project hosts an inferred resource of 28Mt at 0.4% Cu for 110kt contained copper.

**Thursday Gossan high-grade Cu discovery:** In mid-2019 Stavely announced a high-grade discovery within the Thursday Gossan Prospect. The intersection (SMD050) included a 32m wide high-grade zone of mineralisation assayed with up to 40% Cu. A follow-up hole (SMD051) also returned similar high-grade intersections. Exploration activity is expected to focus on extensions of this mineralisation.

**Significant Intercepts:** Significant high-grade intercepts include:

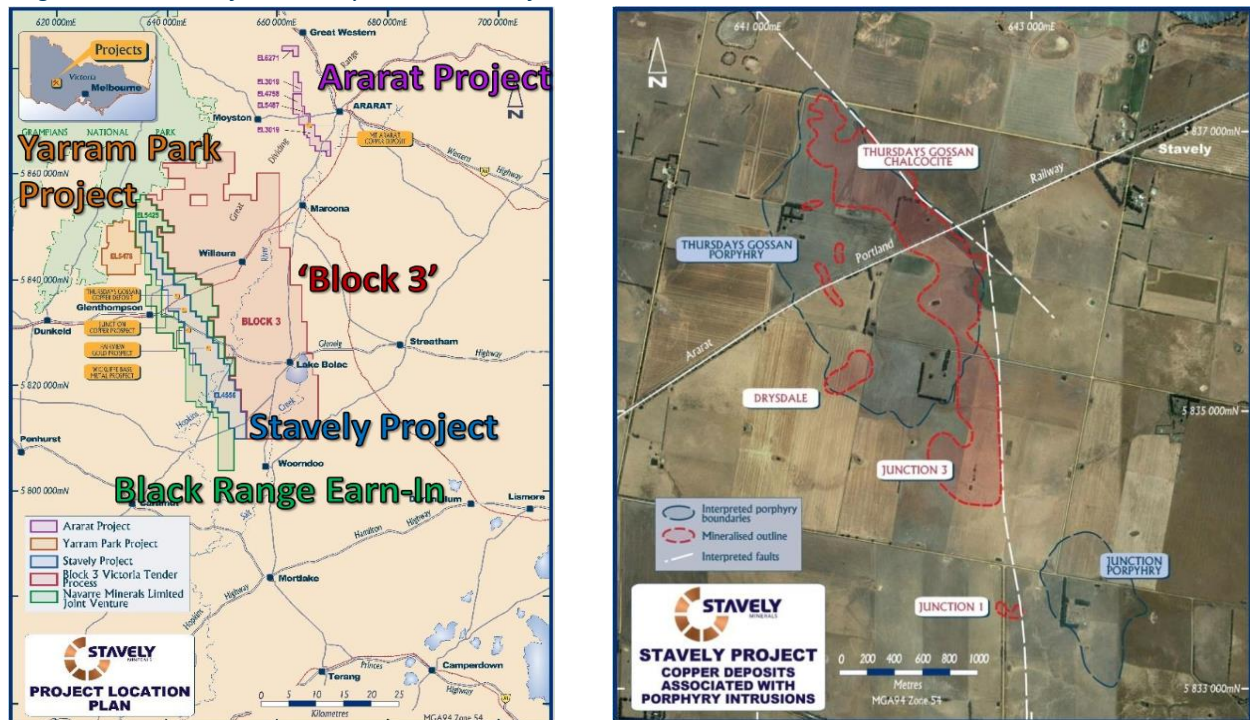
- SMD050 with 32m at 5.88% Cu, 1.00g/t Au and 58g/t Ag from 62m  
Inc 12m at 14.3% Cu, 2.26g/t Au and 145g/t Ag  
Inc 2.0m at 40% Cu, 3.00g/t Au and 517g/t Ag.
- SMD051 with 8.0m with 9.69% Cu, 0.40g/t Au and 16.8g/t Ag from 177m  
Inc 2.0m at 17.3% Cu, 0.57g/t Au and 13.1g/t Ag from 179m  
and 59m at 1.80% Cu, 0.43g/t Au and 15.4g/t Ag from 98m

**Thursday delivers wide, lower-grade porphyry style intersections:** Additionally, exploration has identified potentially significant porphyry mineralisation with wide low-grade intercepts within SMD0044 of 952m 0.23% Cu and 70m at 0.51% Cu including 10m at 2.43% Cu and 0.3g/t Au. SMD044W1 also returned 393m at 0.32% Cu and 18m at 3.62% Cu, 0.28g/t Au and 15g/t Ag, including 7m at 7.74% Cu, 0.46g/t Au and 32g/t Ag, including 2m at 15.7% Cu and 1.07g/t Au and 65g/t Ag.

#### Our View

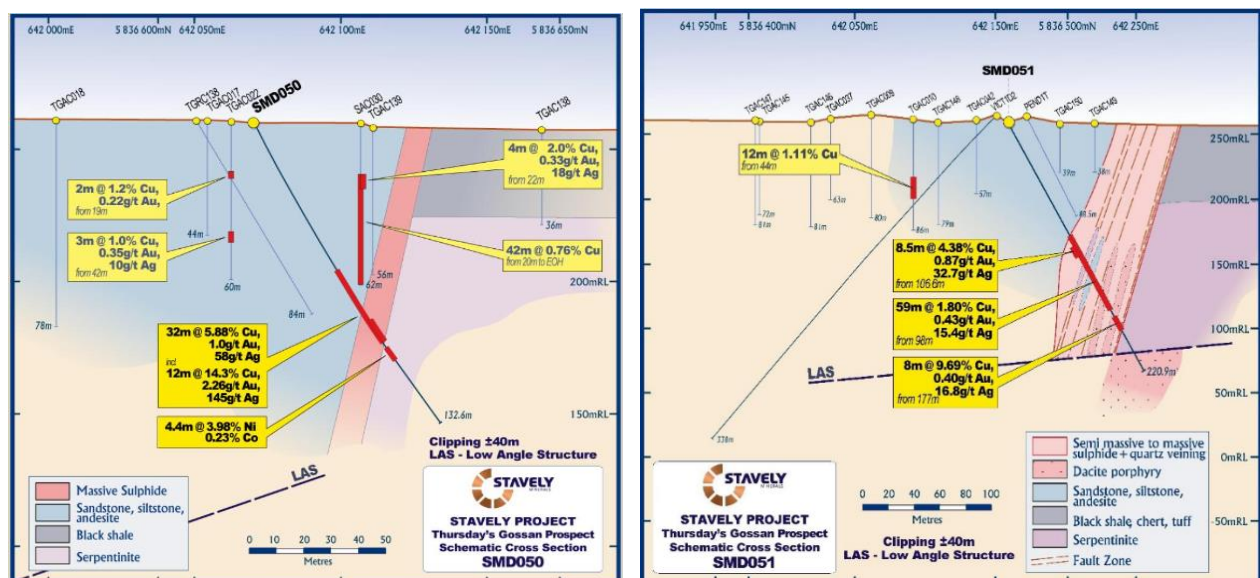
We believe that exploration related news flow will be the major catalysts through 2020 and should exploration activities continue to identify additional intersections of high-grade copper mineralisation, then further re-rating of the stock is likely to follow.

Figure 1: Location of the Stavely and Ararat Projects areas in Victoria



Source: SVY

Figure 2: Cross section of the high-grade Thursdays Gossan Intersections



Source: SVY



## SPEC BUY

Current Price \$0.036  
Market Cap \$26.4m

Thursday, 23 January 2020

## Xanadu Mines (XAM)

### Sitting on a big porphyry system

Analysts | Matthew Keane | Jeff Sansom

#### Quick Read

Xanadu Mines' (XAM) cornerstone Kharmagtai Project in Mongolia is one of the largest district scale copper/gold porphyry systems held by a junior explorer. The project has a cluster of at least five mineralised porphyries, with the highest grade at Stockwork Hill with a best intercept of 646m @ 0.51% Cu & 0.87g/t Au from 16m below surface. Most recently, the company has focused on defining a shallow oxide gold resource above the porphyry systems, with an exploration target of 1.3-2.2Mt @ 0.6-1.0g/t. This gold cap could be used to generate early cashflow to fund development of the deeper porphyries.

#### Key Points

**Kharmagtai – large regional porphyry system:** Kharmagtai comprises a 10km by 7km cluster of mineralised porphyries. While XAM has had a high success rate of target generation to discovery, we believe it is yet to fully unlock the controls on higher grade mineralisation. In April 2019, a Scoping Study indicated an initial 20Mtpa open pit Cu/Au mine with potential to produce ~50ktpa Cu and 135kozpa Au with upfront capex of US\$683m. While the study was not compelling, it demonstrated the potential to exploit mineralisation from surface.

**Oxide gold - A potential source of early cashflow:** In July 2019, XAM released a number of shallow oxide gold targets, generally above known porphyry mineralisation. Subsequent drilling at Copper Hill and Stockwork Hill has been confirmatory with better results including 47m at 2.4g/t Au from 28m and 40m at 2.9g/t Au from surface. Previous testwork has shown achievable oxide gold recoveries of 92.6%. We see potential for a 1-2Moz at 0.8-1.0g/t resource feeding a low capital (US\$40-60m capex) ~2Mtpa facility.

**Need to lock down a strategy:** The strategic direction of the Company has been confusing, seemingly changing from a large scale porphyry developer, to a shallow open pit developer and then a shallow oxide gold exploration play. The likely development scenario may incorporate all elements. We see potential for incoming Chairman, Colin Morehead, to help refine and market the strategy. Mr Morehead successfully led Merdeka Copper Gold's (MDKA:IDR) Tujuh Bukit oxide gold project (above a porphyry) into production in 2017. Despite a \$3.4m equity raising in H2 2019, cash at the end of December is expected to be ~\$1.5m, necessitating more capital for exploration and studies. We see potential for a strategic partnership or joint venture with a mid to large cap miner to help fund development, but XAM will need to demonstrate the scale and value of the project.

#### Our View

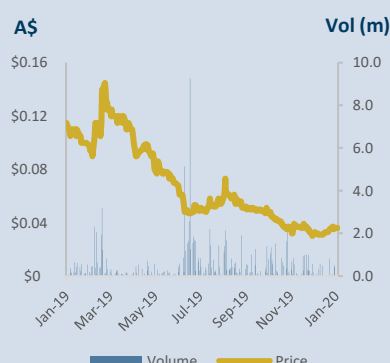
The Board was recently bolstered with Colin Morehead as Non-Executive Chair, a highly credentialed geologist with a long and successful history in exploration and management roles including Newcrest and Merdeka Copper/Gold working on large scale copper and gold deposits such as Cadia, Tujuh Bukit, Gosowong and Telfer. We expect that with this appointment, XAM will evaluate its portfolio and present a re-invigorated strategy.

Ticker:	XAM
Sector:	Metals & Mining
Shares on issue (m):	712.9
Market Cap (\$m):	26.4
Net Cash(\$m):	1.3
Enterprise Value (\$m):	25.1
52 Wk High / Low:	\$0.15 \$0.03
12m Av Daily Vol (m):	0.47

Project/s	Stage
Kharmagtai	Exploration

<b>Directors:</b>	
Colin Moorhead	Non-Executive Chairman
Andrew Stewart	CEO & Managing Director
Ganbayar Lkhagvasuren	Executive Director

Share Price and Volume Graph

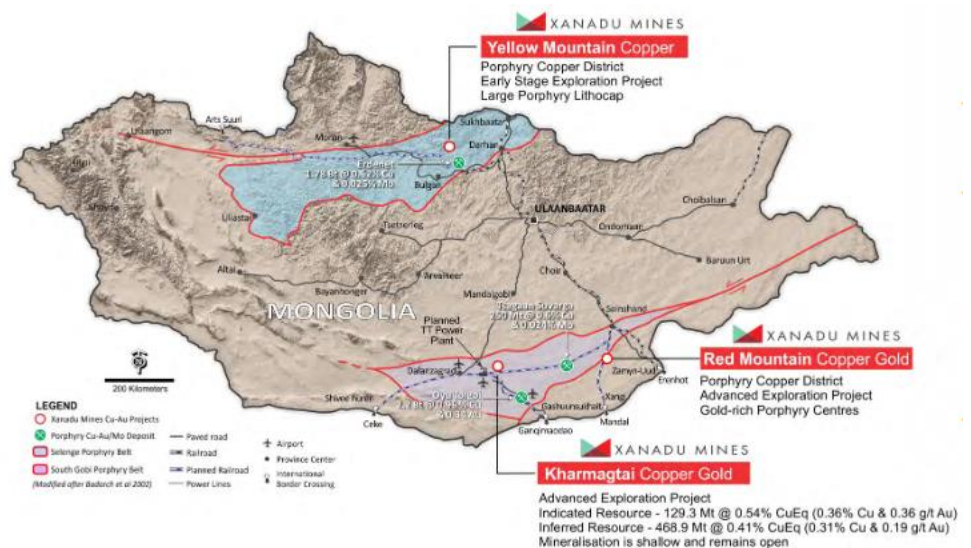


**A cluster of Cu porphyries with potential shallow oxide gold targets above known copper mineralisation which could improve project economics.**

## Project Overview

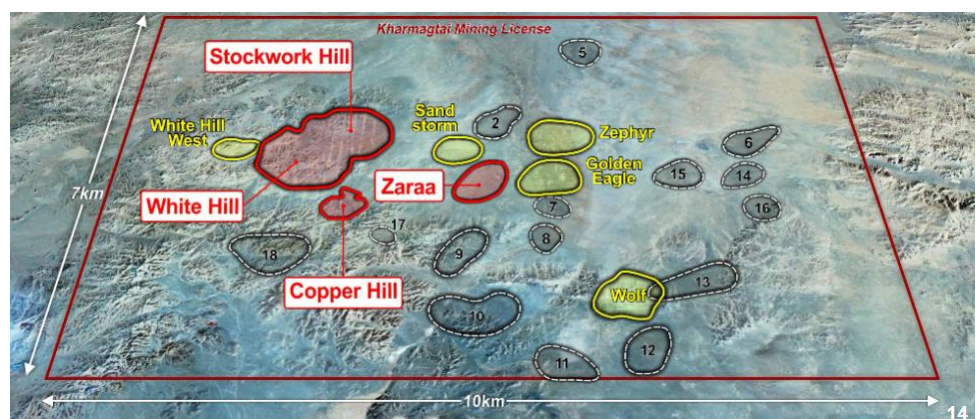
Kharmagtai is located in southern Mongolia, 420km southeast of the country's capital Ulaanbaatar. This cluster of intrusive porphyries is interpreted to be formed from a very large fractionating magma chamber at depth. Mineralisation occurs in three styles, including stock work Cu-Au mineralisation, tourmaline breccia Cu-Au mineralisation and epithermal Au. The project currently has a Measured and Indicated Resource of 202Mt @ 0.6% CuEq and an exploration target of 500Mt to 1.7Bt @ 0.3-0.5% CuEq. The estimated drilling cost to realise this target is ~\$23m. XAM has two additional projects in Mongolia, including Red Mountain and Yellow Mountain, of which, we believe the former has similar prospectively to Kharmagtai. These secondary assets may potentially be monetised to fund Kharmagtai development.

Figure 1: Project location



Source: XAM

Figure 2: Kharmagtai porphyry cluster showing deposits, discoveries and targets



Source: XAM

## SPEC BUY

Current Price \$0.033  
Market Cap \$56.9m

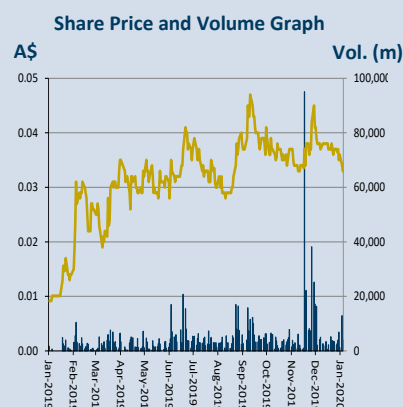
Ticker: HCH  
Sector: Metals & Mining

Shares on issue (m): 1722.8  
Market Cap (\$m): 56.9  
Net Cash/(Debt)(\$m): (1.3)  
Enterprise Value (\$m): 58.2

52 Wk High / Low: \$0.05 \$0.01  
12m Av Daily Vol (m): 4.05

**Project/s** **Stage**  
Cortadera Exploration  
Productera Development  
El Fuego Exploration

**Directors:**  
Murray Black Non-Executive Chairman  
Christian Easterday Executive Director & MD  
Allan Trench Non-Executive Director  
Michael Anderson Non-Executive Director



Thursday, 23 January 2020

## Hot Chili Limited (HCH)

### Cortadera provides the right amount of spice

Analysts | Matthew Keane | Jeff Sansom

#### Quick Read

Following the acquisition of Cortadera, exploration has been in full swing with drilling results providing intercepts of nearly 1km (from near surface) at 0.5% copper and 0.2g/t gold, intermingled with pockets of higher-grade copper-gold intersections. Argonaut estimates that Cortadera and Productera could hold a combined mineral inventory of up to ~1Bt at 0.5% copper. Should this estimate prove true, Hot Chili's portfolio of copper assets are likely to gain the attention of the major copper producers.

#### Key Points

**The acquisition of Cortadera:** The Cortadera Project, ~14km from Hot Chili's Productera asset, provides the Company with a potential Tier-1 copper-gold porphyry in the low-altitude region of Chile presenting an opportunity to potentially deliver bulk tonnage, high-grade copper-gold ore which extends from near surface down to nearly 1km depth.

**Cuerpo 3 drilling identifies globally significant intersections:** Drilling at Cuerpo 3, the largest of the four identified porphyry structures (Cuerpo 1 through 4) has continued to return significant copper-gold intersections, 5 ranked amongst the top 25 global Cu-Au drill intercepts since January 2018. The best intersection to date includes 972m at 0.5% Cu and 0.2g/t Au. Drilling has also been successful in expanding a higher-grade mineralised core zone. Overall, the grade ranges encountered compare favourably to other globally recognised Tier-1 copper mines such as Newcrest's Cadia East with a reserve grade of 0.3% Cu and 0.47g/t Au and Lundin Mining's Candelaria with a reserve grade of 0.85% Cu.

**Drilling activity to provide potential catalysts:** ~2km to the north of Cortadera is a large IP anomaly of similar size and chargeability to Cortadera, which if drilling proves successful could double the Cortadera strike length. HCH are moving to resource definition drilling at Cortadera, targeting a Maiden Resource by mid-2020. HCH is also assessing the merits of a "super-hub" that could see significant processing and transport infrastructure to allow processing of ore from Cortadera and Productera.

**Potential for strategic partnerships:** HCH now holds a potentially globally significant portfolio of copper assets that could develop into Tier 1 assets. We expect that the who's who of copper producers have already started "kicking the tyres" and that a Solgold-esque strategic partnership could eventuate.

#### Our View

Given the upcoming repayment requirements and the expected cash balance, we believe that it is likely that the Company will need to raise funds in the near term.

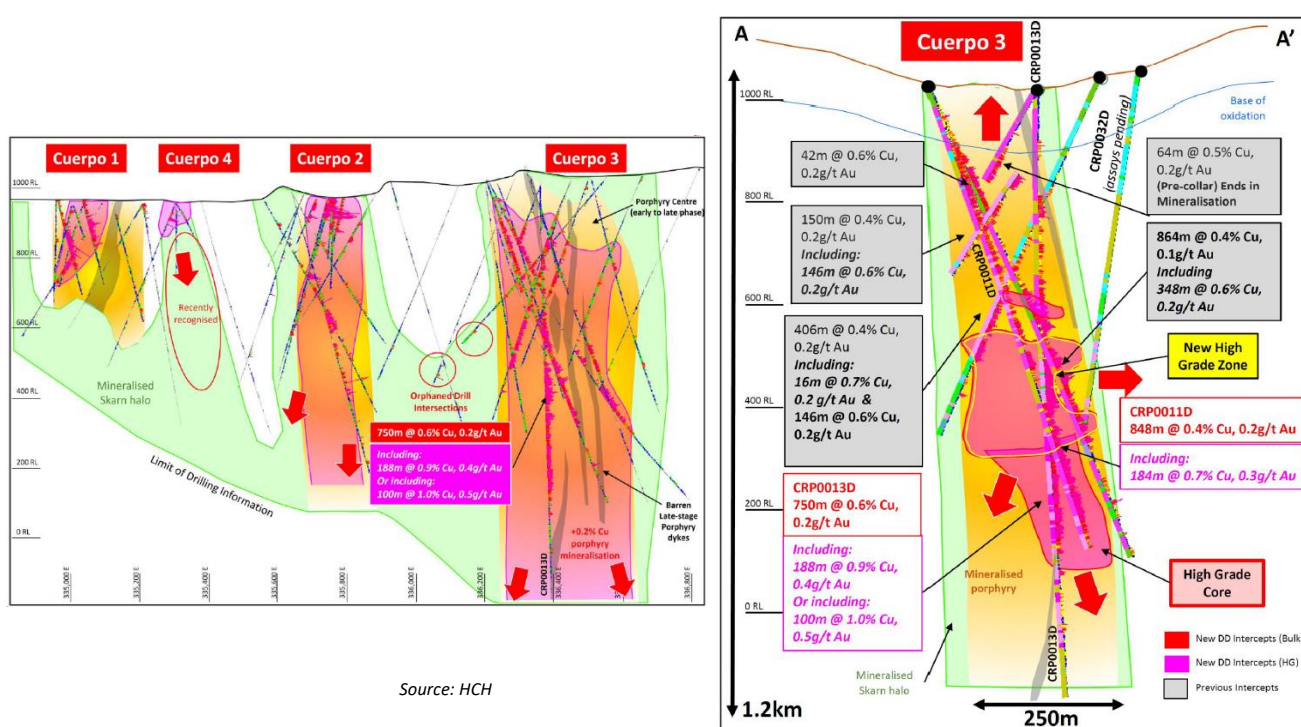
With the potential scale of Cortadera project coupled with the limited number of copper development projects globally, we believe that there will be significant interest from potential strategic partners. Hot Chili is our top pick of the ASX copper developers.



The map illustrates the Cortadera Copper Project area in Chile. Key features include:

- Productora Copper Development:** A large red circle indicating a bulk tonnage copper deposit. It is located near the town of Freirina. The development includes a 10-year open pit mine life, producing 66kt Cu & 25koz Au annually, with a JORC Resource of 237Mt @ 0.48% Cu, 0.1g/t Au, 135ppm Mo.
- Cortadera Porphyry Discovery:** A large red circle indicating a bulk tonnage copper deposit. It is located near the town of Cortadera.
- Infrastructure:** The map shows the Pan American Highway, the Seawater Pipeline Easement, and the Power Transmission Line Easement. The Maintencillo Power Substation is also marked.
- Other Locations:** Los Losas Port (CAP), Huasco, Freirina, Vallenar, Valentina, and San Antonio are labeled.
- Geological Features:** The map shows the Regional Granitoid and the 20km Radius of the Cortadera Porphyry Discovery.
- Legend:** A red circle represents a Bulk tonnage copper deposit, and a red star represents an Existing high grade UG copper mine.
- Scale:** A scale bar indicates 10km.

Figure 2: Identified Porphyry structures at the Cortadera Project (~2km strike length)



Source: HCH



## BUY

Current Price \$10.53  
Target Price \$11.26

Current Price: \$10.53  
Valuation: \$11.26

Ticker: OZL  
Sector: Materials

\* All figures in AUD unless stated otherwise

Shares on Issue (m): 323.9  
Market Cap (\$m): 3,410.4  
Net Cash (\$m): 161.3  
Enterprise Value (\$m): 3,249.1

52 wk High/Low: \$11.54 \$8.68  
12m Av Daily Vol (m): 1.99

### Key Metrics (December Year End)

	2018A	2019F	2020F
P/E (x)	14.9	25.1	12.3
EV/EBITDA (x)	6.0	8.5	5.6

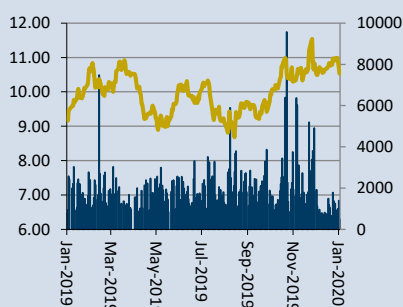
### Financials:

	2018A	2019F	2020F
Revenue (\$m)	1,117.0	1,055.8	1,432.1
EBIT (\$m)	312.0	208.8	386.5
NPAT (\$m)	228.4	135.8	277.4
Net Assets (\$m)	2,915.2	3,122.1	3,324.6
Op CF (\$m)	449.6	442.4	615.3

### Per Share Data:

	2018A	2019F	2020F
EPS (cps)	70.5	41.9	85.6
DPS (cps)	20.9	22.9	23.9
Div Yield (%)	2.0	2.2	2.3
CFPS (cps)	137.2	135.0	187.8

### Share Price Graph and trading volumes (msh)



Please refer to important disclosures at end of the report (from page 36)

Thursday, 23 January 2020

## OZ Minerals (OZL)

### Tailwinds into the 20's

Analysts | Matthew Keane | James Wilson

### Quick Read

OZ Minerals (OZL) has produced its first saleable copper concentrate at Carrapateena and has forecasted a faster ramp-up to achieve the design 4.25Mtpa run-rate within just 12-months. The company has also committed to the development of the Pedra Branca project in Brazil, as part of a Carajás Hub strategy whereby ore will be trucked to the existing Antas processing plant. Argonaut regards OZL as the best positioned mid-cap stock heading into an expected copper price recovery in the mid-2020s. The Company offers production growth from Carrapateena, high margins generated by lowest quartile costs, long mine life from producing assets and a quality pipeline of development assets (i.e. West Musgrave, CentroGold).

### Key Points

**Carrapateena commenced commissioning:** OZL produced first saleable concentrate from Carrapateena this month. The project was delivered about a month late and marginally over the last pre-production capex estimate (A\$970m actual vs A\$920-950m forecast). Over 280kt of development ore has been stockpiled on the ROM, and due to a larger sub-level cave footprint, the ramp-up to the 4.25Mtpa run-rate is now expected to be achieved faster, within 12-months. At steady state, Carrapateena will produce ~65ktpa Cu and ~67ktoz gold at an AISC of US\$1.05/lb. In March 2019, OZL released a Scoping Study to transition to a larger block cave mine by 2026, increasing production to 105-125ktpa copper. Studies on this expansion are due to be completed by H2 2021. Production guidance for 2020 is expected to be released with the December Q results in late-January.

**Committing to the Carajás:** In November 2019, OZL announced a series of strategic agreements with Brazilian major Vale. These included:

- The sale of Carajás copper/gold concentrate to Vale, leveraging off Vale's installed infrastructure
- Option to sell Pedra Branca ore to Vale's Sossego Copper Project (potential logistic savings)
  - An option to acquire prospective copper tenements from Vale, including Santa Lucia has an exploration target of 5-14Mt @ 1.4-2.0% copper
- The existing option to acquire the Pantera Copper Project was also exercised

This strategic partnership, along with OZL's commitment to develop the Pedra Branca deposit consolidates the hub structure which the Company is looking to put in place around the Antas processing facility.

### Recommendation

Given the expected positive macro tailwinds and with our revised copper price assumptions, Argonaut maintains a BUY recommendation and we ascribe a target price of \$11.26, up from \$10.65.

## OZ Minerals

## Equities Research

Analyst: Matthew Keane

Recommendation **BUY**  
 Current Price **\$10.53**  
 Target Price **\$11.26**

Sector **Metals & Mining**  
 Issued Capital (m) **323.9**  
 Market Cap (m) **\$3,410.4**  
 Date **23-January-2020**

Profit & Loss (\$m) 31 December	2018A	2019E	2020E	2021E
Sales revenue	1117.0	1055.8	1432.1	1644.8
+ Loss/gain on forex	7.2	0.0	0.0	0.0
+ Changes in inventory	-83.7	-115.6	-129.1	-112.3
- Operating costs	418.3	478.2	665.6	734.3
- Exploration and Studies	67.2	77.5	34.0	38.0
- Corporate & administration	29.0	32.4	20.0	20.0
- Other Expenses	-14.0	-29.4	0.0	0.0
<b>EBITDA</b>	<b>540.0</b>	<b>381.6</b>	<b>583.4</b>	<b>740.3</b>
- D&A	228.0	172.8	197.0	222.2
<b>EBIT</b>	<b>312.0</b>	<b>208.8</b>	<b>386.5</b>	<b>518.0</b>
+ Finance Income/Expense	6.9	2.3	3.3	13.3
- Impairments and other	0.0	0.0	0.0	0.0
<b>PBT</b>	<b>318.9</b>	<b>211.0</b>	<b>389.7</b>	<b>531.3</b>
- Tax expense	90.5	73.0	112.4	159.5
- Non-controlling interests	0.0	0.0	0.0	0.0
+ Other	0.0	-2.3	0.0	0.0
<b>NPAT</b>	<b>228.4</b>	<b>135.8</b>	<b>277.4</b>	<b>371.9</b>
<b>Normalised NPAT</b>	<b>228.4</b>	<b>135.8</b>	<b>277.4</b>	<b>371.9</b>

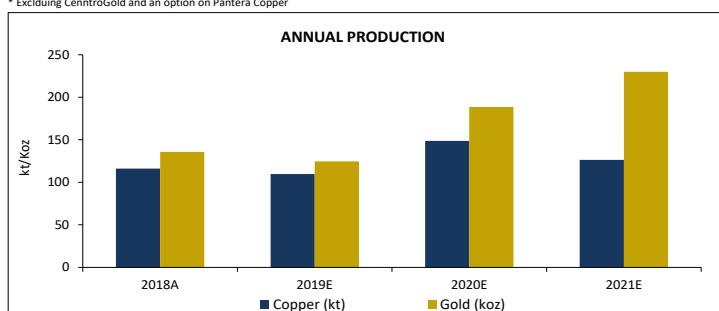
Cash Flow (\$m)	2018A	2019E	2020E	2021E
<b>Operating Cashflow</b>	<b>449.6</b>	<b>442.4</b>	<b>615.3</b>	<b>722.5</b>
- Capex (inc capitalised waste)	426.4	672.9	237.6	203.1
- Capitalised Exploration/Studies	0.0	25.2	0.0	0.0
- Asset purchases (+ asset sales)	183.3	0.0	0.0	0.0
+ Dividends received and other	0.0	0.0	0.0	0.0
<b>Free Cashflow</b>	<b>-160.1</b>	<b>-255.7</b>	<b>377.8</b>	<b>519.4</b>
- Dividends paid	67.6	74.3	77.5	109.8
+ Equity raised	0.0	0.0	0.0	0.0
+ Debt drawdown (- repaid)	0.0	0.0	0.0	0.0
+ Other	0.0	1.0	0.0	0.0
<b>Net Change in Cash</b>	<b>-227.7</b>	<b>-328.9</b>	<b>300.3</b>	<b>409.6</b>
Effects of exchange rate	3.4	0.0	0.0	0.0
Cash at end	505.1	176.2	476.4	886.0

Balance Sheet (\$m)	2018A	2019E	2020E	2021E
Total assets	3,443	3,620	3,853	4,107
Total debt	-	-	-	-
Total liabilities	528	498	528	525
Shareholders funds	2,915	3,122	3,325	3,583

Operations Summary		2018A	2019E	2020E	2021E
Prominent Hill (metal in conc.)	Copper (kt)	110.1	101.8	92.4	57.2
	Gold (koz)	130.9	117.3	125.6	153.3
Carrapateena (metal in conc.)	Copper (kt)	0.0	1.4	46.1	57.0
	Gold (koz)	0.0	1.9	55.6	68.1
Brazilian Assets	Copper (kt)	5.9	6.4	10.2	12.1
	Gold (koz)	4.8	5.3	7.3	8.5
Total Production	Copper (kt)	116.0	109.6	148.6	126.3
	Gold (koz)	135.6	124.5	188.5	229.9
Prominent Hill Cash Costs	(US\$/lb)	0.95	0.93	1.08	0.87
Forecast Copper Price	(US\$/lb)	2.96	2.79	3.00	3.15
Forecast Gold Price	(US\$/oz)	1,265	1,393	1,400	1,300
Exchange Rate Assumptions	(AUD/USD)	0.75	0.69	0.69	0.72

Attributable Reserves & Resources	Ore Mt	Cu (%)	Au (g/t)	Cont. Cu (kt)
<b>Reserves</b>				
Prominent Hill	61.4	0.9%	0.6	555
Carrapateena	91.0	1.6%	0.7	1,500
Antas and Pedra Branca	5.0	2.1%	0.5	104
<b>Total Reserves</b>	<b>157</b>	<b>1.4%</b>	<b>0.7</b>	<b>2,159</b>
<b>Resources*</b>	<b>Ore Mt</b>	<b>Cu (%)</b>	<b>Au (g/t)</b>	<b>Cont. Cu</b>
Prominent Hill	142.5	1.3%	1.0	1,099
Carrapateena	970.0	0.5%	0.2	5,200
Fremantle Doctor	104.0	0.7%	0.5	800
Antas and Pedra Branca	21.6	1.6%	0.4	330
<b>Total Resources</b>	<b>1,238</b>	<b>0.6%</b>	<b>0.3</b>	<b>7,429</b>

\* Excluding CentroGold and an option on Pantera Copper



Financial Summary	2018A	2019E	2020E	2021E
<b>Reported earnings</b>				
Net profit (US\$m)	228.4	135.8	277.4	371.9
EPS (A\$cps)	70.5	41.9	85.6	114.8
PER (x)	14.9	25.1	12.3	9.2
<b>Normalised earnings</b>				
Net profit (US\$m)	228.4	135.8	277.4	371.9
EPS (A\$cps)	70.5	41.9	85.6	114.8
EPS growth (%)	(1.2)	(40.6)	104.3	34.1
PER (x)	14.9	25.1	12.3	9.2
<b>Cashflow</b>				
Operating cashflow (\$m)	449.6	442.4	615.3	722.5
GCFPS (A\$cps)	137.2	135.0	187.8	220.5
PCF (x)	7.7	7.8	5.6	4.8
<b>Dividend</b>				
Dividend (A\$cps)	20.9	22.9	23.9	33.9
Yield (%)	2.0	2.2	2.3	3.2
Franking %	100	100	100	100

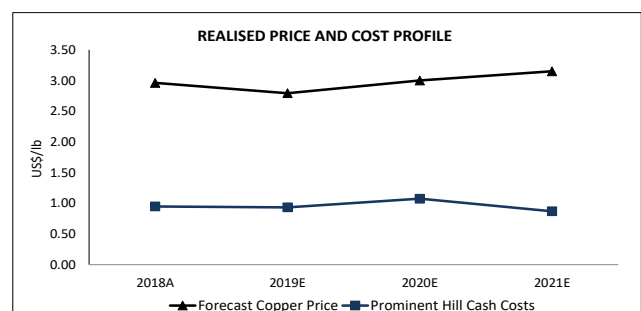
Financial Ratios	2018A	2019E	2020E	2021E
<b>Balance Sheet Ratios</b>				
Total Debt / Equity (%)	0	0	0	0
Interest cover (x)	NA	NA	NA	NA
Acid test ratio (x)	3.5	2.1	3.5	6.1
<b>Profitability Ratios</b>				
Net profit margin (%)	20.4	12.9	19.4	22.6
Return on assets (%)	10.6	6.1	11.4	16.1
Return on equity (%)	7.8	4.3	8.3	10.4

Valuation Summary	A\$m	A\$/sh
Prominent Hill	1,237	3.82
Antas Hub	91	0.28
Carrapateena	1,935	5.98
CentroGold	176	0.54
Corporate Valuation	-142	-0.44
Exploration Assets	100	0.31
Unmined Resources	60	0.19
Hedging	-83	-0.26
Listed Investments	0	0.00
Working Capital	110	0.34
Cash est.	157	0.49
Debt est.	4	0.01
<b>Total</b>	<b>3646</b>	<b>11.26</b>

9% discount rate applied to Australian assets 11% to Brazilian Assets

Directors	
Rebecca McGrath	Non-Executive Chairman
Andrew Cole	Managing Director and CEO
Charlie Startain	Non-Executive Director
Peter Wasow	Non-Executive Director
Tonianne Dwyer	Non-Executive Director
Richard Seville	Director

Substantial Shareholders	%
Dimensional Entities	6.6
Cooper Investors	5.6
Blackrock Group	5.2
Aubil Investment Management	5.0



## BUY

Current Price IDR 1,150  
Target Price IDR 1,257

Ticker: **MDKA.IDX**  
Sector: **Materials**

Shares on Issue (m): **21,898.0**  
Market Cap (US\$m): **1,677**  
Cash (US\$m): **63.5**  
Debt (US\$m): **-255.0**  
Enterprise Value (US\$m): **1,358.3**

52 wk High/Low: **1,270 1,335**  
12m Av Daily Vol (m): **33,644**

### Key Metrics

	2018A	2019F	2020F
P/E (x)	29.0	12.1	13.3
EV/EBITDA (x)	12.2	8.4	8.3

### Financials:

	2018A	2019F	2020F
Revenue (US\$m)	293.9	413.1	415.1
EBITDA (US\$m)	157.8	210.0	203.5
NPAT (US\$m)	57.9	139.0	126.3
OCF	51	179	160
FCF	(64)	110	82

	2018A	2019F	2020F
Net Assets (US\$m)	422.2	640.7	767.1
Current Debt	97	100	69
Non Current Debt	159.5	115.9	61.3

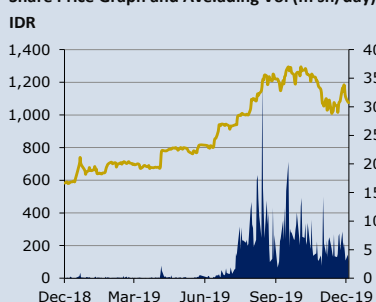
### Per Share Data:

	2018A	2019F	2020F
EPS (cps)	1.3	0.6	0.6
DPS (cps)	0.0	0.0	0.0
CFPS (cps)	0.2	0.8	0.7

### Board of Directors

Tri Boewono	President Director
Richard Ness	Vice President Director and CEO
Gavin Caudle	Director
Hardi Wijaya Liong	Director
Michael W.P. Soeryadjaya	Director
Colin Moorhead	Director
David Thomas Fowler	Director
Chrisanthus Supriyo	Independent Director

### Share Price Graph and Ave.ading Vol (m sh/day)



Thursday, 23 January 2020

## PT Merdeka Copper Gold, Tbk (MDKA)

### Consolidating Indonesian copper/gold

Analysts | James Wilson | Matthew Keane

### Quick Read

Merdeka Copper Gold (IDR:MDKA) is a multi-asset, Indonesian focused miner and developer. The jewel in the portfolio is the world class Tujuh Bukit (TB) copper/gold porphyry in far east Java. Drilling in underway on the Upper High Grade Zone (UHGZ) of the deposit to define Resources/Reserves and attain geotechnical and metallurgical data ahead of a PFS, due for completion later this year. The Company is currently exploiting the epithermal gold resources above the porphyry at the Tujuh Bukit Oxide Gold Project, producing 200-220kozpa at <US\$700/oz AISC. Other assets in the portfolio include the Wetar Copper Project, producing 20-25ktpa Cu in cathode at ~US\$1.70/lb AISC, and the Pani Gold project in Sulawesi. MDKA recently reached an agreement with J Resources to consolidate the two deposits at Pani into a single Joint Venture.

### Key Points

**World Class Porphyry:** MDKA's UHGZ is positioned amongst the largest undeveloped Cu/Au porphyry projects globally. The TB Porphyry has an Inferred Resource of 1.9Bt at 0.45g/t Au and 0.45% Cu for 28Moz Au and 8.7Mt Cu. The UHGZ has an exploration target of 200-300Mt at 0.6-0.8g/t Au and 0.6-0.8% Cu. An early Scoping Study proposed an underground block cave operation ramping up from 6Mtpa to 12Mtpa. We estimate steady state production of ~80ktpa copper and 225kozpa gold, with production commencing late 2024 to 2025. The UHGZ sits amongst the largest Cu/Au projects under development with a size roughly double that of OZ Minerals (ASX:OZL) Carrapateena Project (TB has similar copper metal content but double the gold content) and a grade roughly double the size of Solgold's (LSE:SOLG, Mkt Cap A\$730mm) Cascabel Project. In addition, we note the ongoing Solgold corporate activity with both Newcrest and BHP. Large bulk-tonnage copper gold deposits such as this fit the M&A profile of most major Cu/Au and diversified large cap miners.

**Pani JV transaction:** MDKA recently reached an agreement with J Resources to consolidate the two deposits at Pani into a single JV. MDKA acquired a 66.6% stake in the Pani Gold deposit in Sulawesi for US\$55m in November 2018. Pani has a resource of 90Mt at 0.82g/t Au for 2.4Moz Au and abuts the J Resources deposit 2.3Moz (73Mt at 0.98g/t Au). The key to unlocking value at Pani has been the consolidation of the tenement packages which allows for a single open pit operation vs a split boundary scenario prior to now. Under the terms of the deal, J Resources will own 40% of the combined entity and the remaining 60% will be held by MDKA and Lion Selection (67%/33% JV). The parties will now look to fast track development, with combined Resources of ~5Moz and initial concepts envisaging 250-300kozpa gold production.

### Recommendation

Argonaut maintains a BUY recommendation with a price target of IR\$1,257/sh.

## Merdeka Copper &amp; Gold

## Equities Research

Analysts: M. Keane, J Wilson

Recommendation	BUY
Current Price	IRD 1,075 US\$0.08
Target Price	IRD 1,257 US\$0.09

Sector	Metals & Mining
Issued Capital (m)	21,898
Market Cap (IDR m)	23,540
Market Cap (USD m)	\$1,681
Date	10-January-2020

Profit & Loss (US\$m) 31 December	2018A	2019E	2020E	2021E
Sales revenue	293.9	413.1	415.1	415.1
- Cost of sales	120.5	195.1	203.6	195.6
- Depreciation and Amortisation	34.6	17.0	22.7	26.8
<b>Gross Profit</b>	<b>138.8</b>	<b>201.0</b>	<b>188.8</b>	<b>192.7</b>
- General and Admin Expense	15.5	8.0	8.0	8.0
- Finance Expenses	16.5	16.1	11.9	7.1
- Other Expenses	20.0	0.0	0.0	0.0
<b>Profit Before Tax (PBT)</b>	<b>86.8</b>	<b>176.9</b>	<b>168.8</b>	<b>177.6</b>
- Tax Expense	28.9	37.9	42.2	44.4
<b>Net Profit After Tax (NPAT)</b>	<b>57.9</b>	<b>139.0</b>	<b>126.6</b>	<b>133.2</b>
+ Hedging and Currency Adjustments	25.8	0.0	0.0	0.0
+ Other	2.5	0.0	0.0	0.0
Total Comprehensive Profit	86.2	139.0	126.6	133.2
- Non-Controlling Interestss	5.4	10.1	15.1	17.3
<b>Attributable Profit/Loss</b>	<b>52.5</b>	<b>128.9</b>	<b>111.6</b>	<b>115.9</b>
EBITDA	157.8	210.0	203.5	211.5

Cash Flow (US\$m)	2018A	2019E	2020E	2021E
<b>Operating Cashflow</b>	<b>50.9</b>	<b>192.9</b>	<b>172.0</b>	<b>167.1</b>
- Capex (inc capitalised waste)	6.2	31.7	38.3	15.0
- Capitalised Exploration/Studies	21.4	36.7	40.0	21.7
- Asset purchases (+ asset sales)	84.3	0.0	0.0	0.0
+ Other	-2.9	0.0	0.0	0.0
<b>Free Cashflow</b>	<b>-63.9</b>	<b>124.5</b>	<b>93.7</b>	<b>130.4</b>
- Dividends paid	0.0	0.0	0.0	0.0
+ Equity raised	91.3	62.5	0.0	0.0
+ Debt drawdown (- repaid)	-3.5	-46.8	-89.7	-62.3
- Finance Expense	18.5	0.0	11.1	7.5
+Other	-27.7	0.0	0.0	0.0
<b>Net Change in Cash</b>	<b>-22.2</b>	<b>140.2</b>	<b>-7.0</b>	<b>60.7</b>
Effects of exchange rate	1.6	0.0	0.0	0.0
<b>Cash at end</b>	<b>14.1</b>	<b>154.3</b>	<b>147.3</b>	<b>208.0</b>

Balance Sheet (US\$m)	2018A	2019E	2020E	2021E
Total Assets	798	1,097	1,144	1,212
Current Debt	97	104	62	47
Long Term Debt	159	110	61	14
Total Liabilities	376	456	377	312
Shareholder Equity	422	641	767	901

Operations Summary	2018A	2019E	2020E	2021E
Tujuh Bukit Oxide				
Gold (koz)	167.5	210.9	186.0	171.1
Silver (koz)	140.7	378.0	393.2	393.2
AISC (US\$/oz)	589.8	650.4	773.8	801.6
Tujuh Bukit Porphyry				
Copper (kt)	0.0	0.0	0.0	0.0
Gold (koz)	0.0	0.0	0.0	0.0
AISC (US\$/lb Cu)	0.00	0.00	0.00	0.00
Wetar				
Copper (kt)	17.1	19.6	23.8	24.7
AISC (US\$/lb Cu)	1.73	2.00	1.89	1.34
<b>Group Production</b>	<b>17.1</b>	<b>19.6</b>	<b>23.8</b>	<b>24.7</b>
<b>Gold (koz)</b>	<b>167.5</b>	<b>210.9</b>	<b>186.0</b>	<b>171.1</b>
<b>Silver (koz)</b>	<b>140.7</b>	<b>378.0</b>	<b>393.2</b>	<b>393.2</b>
Forecast Copper Price (US\$/lb)	2.96	2.84	3.00	3.00
Forecast Gold Price (US\$/oz)	1,265	1,375	1,350	1,425

Attributable Reserves & Resources	Ore Mt	Cu (%)	Au (g/t)	Cont. Cu (kt)	Cont. Au (Moz)
Reserves					
Tujuh Bukit Oxide	43		0.8		1.1
Wetar	3	2.8%		93	
<b>Total Reserves</b>	<b>46</b>				

Resources	Ore Mt	Cu (%)	Au (g/t)	Cont. Cu (kt)	Cont. Au (Moz)
Tujuh Bukit Oxide	102		0.7		2.2
Tujuh Bukit Porphyry	1,940	0.5%	0.5	19	28.3
Wetar	10	2.0%		196	
Partolang	9	1.2%			
Pani	90.0		0.8		2
<b>Total Resources</b>	<b>2,150</b>	<b>0.4%</b>	<b>0.5</b>	<b>215</b>	<b>33</b>

Financial Summary	2018A	2019E	2020E	2021E
<b>Reported earnings</b>				
Enterprise Value (US\$m)	1,924	1,740	1,658	1,535
EPS (US\$cps)	1.3	0.6	0.6	0.6
PER (x)	29.1	12.1	13.3	12.6
EPS growth (%)	NA	(101.7)	(9.8)	4.9
EV/EBITDA	12.2	8.3	8.1	7.3
EV/FCF	(30.1)	14.0	17.7	11.8

<b>Cashflow</b>				
Operating cashflow (\$m)	50.9	192.9	172.0	167.1
GCFPS (US\$cps)	0.2	0.9	0.8	0.8
PCF (x)	33.0	8.7	9.8	10.1
<b>Dividend</b>				
Dividend (US\$cps)	0.0	0.0	0.0	0.0
Yield (%)	0.0	0.0	0.0	0.0

Financial Ratios	2018A	2019E	2020E	2021E
<b>Balance Sheet Ratios</b>				
Total Debt / Equity (%)	61	33	16	7
Interest cover (x)	7.5	12.0	15.1	26.0
Acid test ratio (x)	0.2	0.5	0.6	1.0

<b>Profitability Ratios</b>				
Net profit margin (%)	19.7	33.7	30.5	32.1
Return on assets (%)	7.3	12.7	11.1	11.0
Return on equity (%)	13.7	21.7	16.5	14.8

Valuation Summary	IRD b	IRD/sh	USD m	USD/sh
<b>Unlevered, Attributable, Asset Values</b>				
Tujuh Bukit Oxide	4,117	186	294	0.01
Tujuh Bukit Porphyry	16,842	762	1203	0.05
Wetar	3,180	144	227	0.01
<b>Unmined Resources / Exploration Upside</b>				
Tujuh Bukit Porphyry	3,197	145	228	0.01
Pani	2,439	110	174	0.01
Wetar Exploration	700	32	50	0.00
Cash (Post equity raising)	889	40	64	0.00
Debt	(3,570)	(161)	-255	-0.01
<b>Total</b>	<b>27,794</b>	<b>1,257</b>	<b>1,985</b>	<b>0.09</b>

10% Discount Rate Applied (Derived from high end of WACC range of 6.7% to 9.9%)

Directors	
Tri Boewono	President Director
Richard Ness	Vice President Director and CEO
Gavin Caudle	Director
Hardi Wijaya Liong	Director
Michael W.P. Soeryadjaya	Director
Colin Moorhead	Director
David Thomas Fowler	Director
Chrisanthus Supriyo	Independent Director

Substantial Shareholders	%
Pt Saratoga Investama Sedaya Tbk	19.7
Pt Provident Capital Indonesia	17.2
Thohir Garibaldi	9.0
Pt Suwana Arta Mandiri	6.7
Regency Of Banyuwangi	5.2



## BUY

Current Price \$5.99  
Target Price \$7.50

Current Price: \$5.99  
Valuation: \$7.50

Ticker: SFR  
Sector: Materials

Shares on Issue - pro-forma (m): 178.1  
Market Cap (\$m): 1,066.8  
Net Cash (\$m)\*: 280.8  
Enterprise Value (\$m): 786.0

52 wk High/Low: \$8.34 \$5.51  
12m Av Daily Vol (m shares): 1.08

### Key Metrics

	19A	20E	21E
P/E (x)	10.3	13.7	74.6
EV/EBITDA (x)	2.6	2.2	2.1

### Financials:

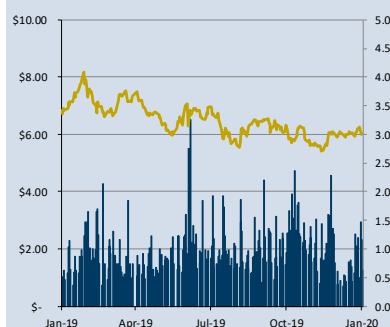
	19A	20E	21E
Op CF (\$m)	210.4	316.4	316.5
Revenue (\$m)	592.2	658.1	713.3
EBIT (\$m)	160.8	148.7	96.1
NPAT (\$m)	104.0	78.2	14.4
Net Assets (US\$m)	604.2	358.2	-272.2

### Per Share Data:

	19A	20E	21E
EPS (cps)	104.0	78.2	14.4
DPS (cps)	23.0	19.0	15.0
Div Yield	3.8%	3.2%	2.5%
CFPS (cps)	117.6	176.8	176.8

In A\$ unless otherwise stated

### Share price (A\$/sh) and trading vol. (m shares/day)



Thursday, 23 January 2020

## Sandfire Resources (SFR)

### Geographic Diversification

Analysts | Matthew Keane | James Wilson

### Quick Read

As Sandfire Resources' (SFR) core project, DeGrussa heads into its final years of production, SFR is building a pipeline of the next generation of production assets. This includes the T3 Copper Project in Botswana and the Black Butte Copper Project in Montana, US (85% SFR). In addition, the Company is creeping up the register of Adriatic Resources (ADT), with the polymetallic Vareš Project in Bosnia and Herzegovina.

### Key Points

**The next wave of assets:** SFR is amassing a quality global pipeline of base metal assets. Argonaut expects staged development of T3 and Black Butte, with T3 commencing production first. The potential combination of both assets would generate similar copper output to DeGrussa (~60ktpa vs 65-75kt at DeGrussa), albeit without gold credits. We estimate DeGrussa will generate ~ A\$1b free cashflow at spot copper and gold prices, prior to depletion of current Reserves. This is sufficient to fund development capex for T3 (US\$182m, A\$270m) and Black Butte (US\$218m, A\$323m). SFR also owns 15.8% of the ADT polymetallic Rupice deposit and is farming into White Rock Minerals (WRM) belt-scale VMS prospective Red Mountain project in Alaska.

**Botswana gearing up:** The T3 deposit in Botswana has a Reserve of 34.4Mt @ 1.0% Cu. The initial mine life is ~11 years with annual production of 28-30kt Cu, plus silver credits. Final permitting is underway, expected in the current half year. An optimisation study is underway (due for completion in April/May), which we believe, could potentially lower the head grade of 1% Cu, but add substantial tonnes and mine life. A final investment decision (FID) is expected mid-2020. SFR will also hit the ground running on exploration on 11,700km<sup>2</sup> landholding in the Kalahari Copper Belt. The initial focus is likely to be on the delineation of additional and potentially high-grade Reserves to offset lower grade tonnes from the T3 deposit. However, Argonaut also expects a focus belt-wide targets, with a particular focus on the highly prospective T20 Project to the southwest of T3.

**Geographic risk:** Successful development of both T3 and Black Butte will see SFR transition from a single mine, Australian domiciled producer to a globally diversified producer. Operating in new jurisdictions and spreading the Company's resources over three time zones, poses significant risks. The right organisational structure will be crucial to the success of this diversification. Jason Grace (ex-Newcrest and Minerals Resources) was recently appointed as Perth based Chief Operating Officer (COO). He will oversee standalone technical teams located in each jurisdiction.

### Recommendation

On the basis of our revised price assumptions, we upgrade Sandfire to a BUY with a target price of \$7.50, down from \$7.60 on as we roll our model forward.

## Sandfire Resources

## Equities Research

Analyst: Matthew Keane

**Recommendation** BUY  
**Current Price** \$5.99  
**Target Price** \$7.50

**Sector** Metals & Mining  
**Pro-forma Issued Capital (m)** 178.1  
**Market Cap (m)** \$1,066.8  
**Date** 23-January-2020

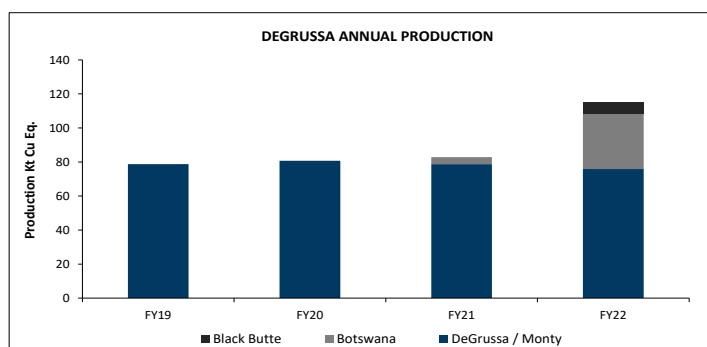
Profit & Loss (\$m) 30 June	2019A	2020E	2021E	2022E
Sales revenue	592.2	658.1	713.3	1008.7
+ Other income	7.6	7.4	8.4	6.8
- Operating costs	253.3	268.7	313.5	441.0
- Exploration and evaluation (expensed)	48.7	25.5	27.5	27.5
- Corporate & marketing	7.3	10.0	10.0	10.0
- Other inc. foreign exchange loss	-11.1	0.0	0.0	1.0
<b>EBITDA</b>	<b>301.6</b>	<b>361.3</b>	<b>370.7</b>	<b>536.0</b>
- D&A	140.8	212.6	274.6	109.2
<b>EBIT</b>	<b>160.8</b>	<b>148.7</b>	<b>96.1</b>	<b>426.8</b>
- Finance Expense	2.0	0.0	0.0	0.0
<b>Operating profit</b>	<b>158.8</b>	<b>148.7</b>	<b>96.1</b>	<b>426.8</b>
- Impairments	0.0	0.0	0.0	0.0
- Other Misc Items	0.0	0.0	0.0	0.0
- Tax expense	54.6	70.5	81.8	93.6
- Non-controlling interests	0.0	0.0	0.0	0.0
<b>NPAT</b>	<b>104.0</b>	<b>78.2</b>	<b>14.4</b>	<b>333.2</b>
- Non-Controlling Interest	2.4	2.4	2.3	2.3
<b>Normalised NPAT</b>	<b>104.0</b>	<b>78.2</b>	<b>14.4</b>	<b>333.2</b>

Cash Flow (\$m)	2019A	2020E	2021E	2022E
<b>Operating Cashflow</b>	<b>210.4</b>	<b>316.4</b>	<b>316.5</b>	<b>470.9</b>
- Capex	86.5	158.7	50.0	50.0
- Exploration & evaluation (total)	0.8	25.5	27.5	27.5
- Asset purchases (+ asset sales)	82.4	0.0	0.0	0.0
+ Other	0.1	0.0	0.0	0.0
<b>Free Cashflow</b>	<b>40.7</b>	<b>132.2</b>	<b>239.0</b>	<b>393.4</b>
- Dividends	41.5	34.4	26.7	62.6
+ Equity raised	5.9	0.0	0.0	0.0
+ Debt drawdown (- repaid)	-0.3	0.0	0.0	0.0
- Interest expense (+ Interest earned)	0.2	0.0	0.0	0.0
<b>Net Change in Cash</b>	<b>4.6</b>	<b>97.8</b>	<b>212.3</b>	<b>330.9</b>
Effects of exchange rate	-0.6	0.0	0.0	0.0
<b>Cash at end</b>	<b>247.4</b>	<b>345.1</b>	<b>557.4</b>	<b>888.2</b>

Balance Sheet (\$m)	2019A	2020E	2021E	2022E
Total assets	735.9	474.4	-152.0	-462.4
Total debt	0.4	0.0	0.0	0.0
Total liabilities	131.7	116.2	120.1	140.8
Shareholders funds	604.2	358.2	-272.2	-603.3

Production Summary	2019A	2020E	2021E	2022E
DeGrussa and Monty (100% Basis)				
Copper (kt)	69.4	72.4	71.3	67.8
Gold (koz)	44.5	39.5	35.6	38.8
Botswana				
Copper (kt)	0.0	0.0	3.8	29.7
Silver (koz)	0.0	0.0	112	966
Black Butte				
Copper (kt)	0.0	0.0	0.0	6.6
Silver (koz)	0.0	0.0	0.0	0.0
Unit Cash Cost, inc Royalty (US\$/lb)	0.83	0.98	1.07	1.19
Copper Price (US\$/lb)	2.79	2.80	3.13	3.20
Gold Price (US\$/oz)	1263	1435	1300	1300
Exchange Rate Assumptions (AUD/AUD)	0.71	0.69	0.72	0.72

Attributable Reserves & Resources					
<b>Reserves (attributable)</b>	<b>Ore Mt</b>	<b>Cu %</b>	<b>Au g/t</b>	<b>Cu (kt)</b>	<b>CuEq. (kt)</b>
DeGrussa	8.2	3.70%	1.20	299	367
Botswana	34.4	1.00%		343	382
<b>Total Reserves</b>	<b>42.6</b>	<b>3.90%</b>	<b>1.40</b>	<b>642</b>	<b>748</b>
<b>Resources</b>	<b>Ore Mt</b>	<b>Cu %</b>	<b>Au g/t</b>	<b>Cu (kt)</b>	<b>CuEq. (kt)</b>
DeGrussa	7.6	4.50%	1.50	306	381
Botswana	60.2	1.00%		590	662
Black Butte (85%)	15.3	3.32%		508	515
Thaduna Green Dragon	8.2	1.80%		150	970
<b>Total Resources</b>	<b>83.1</b>	<b>1.75%</b>	<b>0.14</b>	<b>1554</b>	<b>2528</b>



Financial Summary	2019A	2020E	2021E	2022E
<b>Reported earnings</b>				
Net profit (US\$m)	104.0	78.2	14.4	333.2
EPS (A\$cps)	58.4	43.9	8.1	187.1
PER (x)	10.3	13.6	74.2	3.2
<b>Normalised earnings</b>				
Net profit (US\$m)	104.0	78.2	14.4	333.2
EPS (A\$cps)	58.4	43.9	8.1	187.1
EPS growth (%)	(13.9)	(24.8)	(81.6)	2218.8
PER (x)	10.3	13.6	74.2	3.2
<b>Cashflow</b>				
Operating cashflow (\$m)	210.4	316.4	316.5	470.9
GCFPS (A\$cps)	117.6	176.8	176.8	263.1
PCF (x)	5.1	3.4	3.4	2.3
<b>Dividend</b>				
Dividend (A\$cps)	23.0	19.0	15.0	35.0
Yield (%)	3.8	3.2	2.5	5.8
Franking	100%	100%	100%	100%

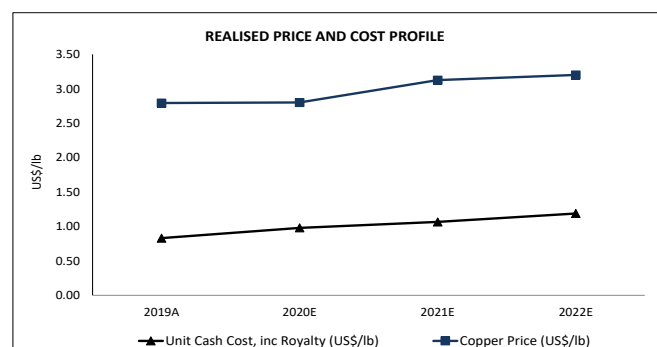
Financial Ratios	2019A	2020E	2021E	2022E
<b>Balance Sheet Ratios</b>				
Total Debt / Equity (%)	0	0	0	0
Interest cover (x)	79.6	0	0	0
Acid test ratio (x)	4.3	7.9	6.3	5.7
<b>Profitability Ratios</b>				
Net profit margin (%)	17.6	11.9	2.0	33.0
Return on assets (%)	14.1	16.5	-9.5	-72.1
Return on equity (%)	5.8	4.6	-18.9	-1.8

Valuation Summary	A\$m	A\$/sh	Risk Discount
DeGrussa (100%)	712	4.00	
T3 (Botswana)	195	1.09	-15%
Black Butte (85%)	96	0.54	-40%
Corporate Valuation	-77	-0.43	
Other Resources	5	0.03	
Investments	50	0.28	
Exploration Assets	75	0.42	
Hedging	0	0.00	
Unpaid Capital	0	0.00	
Pro-Forma Cash est.	281	1.58	
Debt	0	0.00	
<b>Total</b>	<b>1336</b>	<b>7.50</b>	

Australian Assets 9% discount rate  
 Botswana Assets 11% discount rate  
 US Assets 10% discount rate

Directors	
Derek La Ferla	Non-Executive Chairman
Karl Simich	Managing Director
Roric Smith	Non-Executive Director
Paul Hallam	Non-Executive Director
Robert Scott	Non-Executive Director
Maree Arnason	Non-Executive Director

Substantial Shareholders	%
Mitsubishi UFJ Financial	7.6%
Vinva Investment Management	6.0%
State Street Corporation	5.1%
LSV Asset Management	5.1%
Blackrock Group	5.0%
Dimensional Equities	5.0%





## BUY

Current Price HK\$10.78  
Target Price HK\$12.70

<b>Ticker</b>	<b>358 HK</b>
<b>Sector</b>	<b>Materials</b>
<b>Shares on Issue (m)</b>	<b>3,463</b>
<b>(HK\$m)</b>	
Market Cap	53,186
Net Cash (debt)	-21,013
Enterprise Value	74,198

<b>(US\$m)</b>	
Market Cap	6,845
Net Cash	-2,705
Enterprise Value	9,550

52 wk High/Low (HK\$)	11.40	8.57
12mth Avg Daily Vol (m)		4

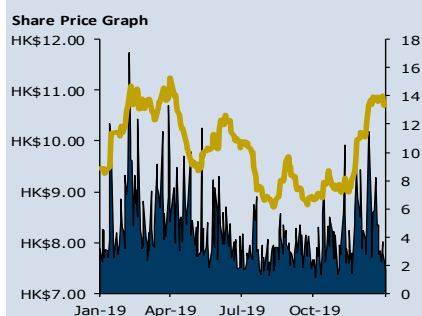
<b>Key Metrics</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>
PE (x)	11.6	13.0	11.2
PB (x)	0.6	0.6	0.6
EV/EBITDA (x)	7.5	11.4	10.1
Dividend Yield (%)	2.5	2.2	2.6
Gross margin (%)	3.2	3.4	3.4
ROE (%)	4.9	4.9	5.4
Interest Cover (x)	4.1	3.0	3.4
Net debt to equity (%)	25.5	47.7	45.9
ST Debt/Total Debt (%)	11.2	7.0	7.0

<b>Financials</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>
<b>RMBm</b>			
Revenue	214,395	232,079	248,338
EBIT	4,159	4,602	5,066
Net Profit	2,415	2,517	2,932
Consensus		2,847	2,996
(Below)/Above Consensus		-12%	-2%

<b>Growth</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>
<b>% yoy</b>			
Revenue	5	8	7
EBITDA	12	13	12
Net Profit	46	4	16

<b>Per Share Data</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>
<b>RMB</b>			
EPS	0.70	0.73	0.85
BPS	14.37	14.90	15.54
CFPS	1.99	0.94	1.06
DPS	0.20	0.21	0.24

<b>Key DCF-based Valuation Assumptions</b>	
Beta	0.93
Risk free rate	3.1%
Equity risk premium	8.6%
Cost of equity	11.7%
Cost of debt	1.1%
Equity to Market cap ratio	45.5%
Debt to Market cap ratio	54.5%
WACC	6.2%
Terminal Growth	0.0%
DCF (HK\$)	15.70



Please refer to important disclosures at end of the report (from page 36)

Thursday, 23 January 2020

## Jiangxi Copper (358 HK)

### Acquisitions to Sustain Growth

Analyst: Helen Lau

#### Quick Read

Jiangxi Copper became strategically acquisitive in 2019 after years of being dormant. In March, for Rmb3.9b it acquired a 29.99% stake in Hebang, a Chinese gold miner and smelter with a gold processing capacity of 50tpa and gold reserves of 112t. In December 2019, for US\$1.1b it acquired an 18.015% stake in First Quantum (FQM), the world's seventh largest copper miner with copper projects across the globe. The two acquisitions are financially backed by its parent company. In view of an improving Chinese macroeconomic outlook and expected stronger demand for copper, we have revised our 2020 and 2021 copper price forecast from US\$2.67 and US\$2.72 up to US\$3.00 and US\$3.15/lb respectively. This has resulted in an upward earnings revision of 28% and 42% respectively. We raise our target price to HK\$12.70 (prior HK\$11.80).

#### Key Points

**Benefits from the FQM acquisition:** FQM is the world seventh largest copper miner with a total copper resources of 49Mt, ~ 7% of global resources. Being the largest shareholder of FQM with an 18% stake, the Company benefits from an interest in FQM's copper ore resources and the expected future strong free cash flows. FQM owns copper mine development projects in eight countries including Zambia, Panama and Peru. FQM's copper production in 2018 was 606kt. FQM's guidance indicates annual copper production for 2019 to 2021 to be 720kt, 840kt and 870kt respectively, two to three times more than Jiangxi Copper's own copper production of 200Ktpa. Backed by strong production growth, the market estimates robust net income growth of 64% in 2020 and 88% in 2021. FQM is expected to generate positive free cash flows in 2020 with US\$712m and US\$1.1b by 2022.

**Financial support from the parent company:** Jiangxi Copper Group, the parent company, has extended unsecured loans of Rmb6.4b in the past 12 months at an interest rate of 2.35%-3.69%, much lower than the market prevailing rate of 4.15%. Low interest rates provide a cheap source of financing for the Company's expansion.

**Upward earnings revision on bullish copper price forecast:** In addition to the company's improved fundamentals driven by top quality acquisitions and growing copper production, our bullish view on copper price leads us to revise our 2020 and 2021 earnings estimate by 28% and 42% respectively.

#### Recommendation

We maintain BUY recommendation based on a price target of HK\$12.70 up from HK\$11.80. The valuation is based on the prior valuation matrix of 11x PE, 0.7x PB, 11x EV/EBITDA on 2020 earnings forecast.

## Jiangxi Copper (358 HK Equity)

Recommendation BUY  
 Current Price HK\$10.70  
 Target Price HK\$12.70

As of 31 December

Profit & Loss	RMB m	2018 A	2019 F	2020 F	2021 F
Revenue		214,395	232,079	248,338	258,871
Cost of Revenue		207,552	224,256	239,835	250,088
<b>Gross Profit</b>		<b>6,843</b>	<b>7,823</b>	<b>8,503</b>	<b>8,784</b>
Other Operating Income		213	156	133	108
Operating Expenses		2,897	3,376	3,571	3,097
Operating Income (Loss)		4,159	4,602	5,066	5,794
Non-Operating (Income)/Loss		896	1,095	981	955
Interest Expense		1,409	2,184	2,147	2,147
Interest Income		673	1,144	1,167	1,192
<b>Pretax Income/(Loss)</b>		<b>3,262</b>	<b>3,507</b>	<b>4,085</b>	<b>4,840</b>
Income Tax		840	982	1,144	1,355
Net Income Incl. MI		2,423	2,525	2,941	3,484
Minority Interest		8	8	9	11
<b>Net Income</b>		<b>2,415</b>	<b>2,517</b>	<b>2,932</b>	<b>3,474</b>
EBIT		4,159	4,602	5,066	5,794
Depreciation & Amortization		1,669	1,977	2,331	2,449
<b>EBITDA</b>		<b>5,828</b>	<b>6,579</b>	<b>7,397</b>	<b>8,243</b>
Tax rate		26%	28%	28%	28%

Cash Flow	RMB m	2018 A	2019 F	2020 F	2021 F
Net Income		2,415	2,517	2,932	3,474
Depreciation & Amortization		1,669	1,977	2,331	2,449
Non-Cash Items		1,241	8	9	11
Chg in Working Capital		1,579	(1,242)	(1,614)	(1,055)
<b>Cash from Operating Activities</b>		<b>6,904</b>	<b>3,261</b>	<b>3,658</b>	<b>4,878</b>
Change in Fixed & Intangible Assets		(2,400)	(15,000)	(3,000)	(3,000)
Disposal of Fixed & Intangibles		154	-	-	-
Acquisition of Fixed & Intangibles		(2,554)	(15,000)	(3,000)	(3,000)
Acq of Fixed Assets		(2,122)	(15,000)	(3,000)	(3,000)
Net Cash from Acq & Divestures		(477)	-	-	-
<b>Cash from Investing Activities</b>		<b>(9,212)</b>	<b>(15,000)</b>	<b>(3,000)</b>	<b>(3,000)</b>
Dividend Paid		(693)	(693)	(722)	(841)
Cash From (Repayment) Debt		3,475	20,000	-	-
Increase in Borrowings		59,891	20,000	-	-
Decrease in Borrowings		(56,416)	-	-	-
Other Financing Activities		(363)	-	-	-
<b>Cash from Financing Activities</b>		<b>2,420</b>	<b>19,307</b>	<b>(722)</b>	<b>(841)</b>
Net Changes in Cash		284	7,568	(64)	1,037
Cash BEG		10,363	10,647	18,216	18,152
Cash END		10,647	18,216	18,152	19,189
Capex		(2,122)	(15,000)	(3,000)	(3,000)
<b>Free Cash Flow</b>		<b>4,782</b>	<b>(11,739)</b>	<b>658</b>	<b>1,878</b>

Balance Sheet	RMB m	2018 A	2019 F	2020 F	2021 F
Cash & Cash Equivalents		10,647	18,216	18,152	19,189
ST Investments		9,791	9,791	9,791	9,791
Accounts & Notes Receivables		8,958	9,696	10,376	10,816
Inventories		17,259	24,668	26,382	27,510
Other ST Assets		22,906	22,906	22,906	22,906
<b>Total current Assets</b>		<b>69,562</b>	<b>85,278</b>	<b>87,607</b>	<b>90,212</b>
PPE		24,747	37,770	38,439	38,991
LT Investments & Receivables		3,197	3,197	3,197	3,197
Other LT Assets		5,360	5,360	5,360	5,360
<b>Total Noncurrent Assets</b>		<b>33,304</b>	<b>46,327</b>	<b>46,996</b>	<b>47,547</b>
<b>Total Assets</b>		<b>102,866</b>	<b>131,605</b>	<b>134,603</b>	<b>137,759</b>
Payables & Accruals		14,165	21,071	21,850	22,363
ST Debt		29,901	49,901	49,901	49,901
Other ST Liabilities		2,071	2,071	2,071	2,071
<b>Total Current Liabilities</b>		<b>46,138</b>	<b>73,044</b>	<b>73,823</b>	<b>74,336</b>
LT Debt		3,782	3,782	3,782	3,782
Other LT Liabilities		919	919	919	919
<b>Total Noncurrent Liabilities</b>		<b>4,701</b>	<b>4,701</b>	<b>4,701</b>	<b>4,701</b>
Total Liabilities		50,839	77,745	78,524	79,037
Common Stock		3,463	3,463	3,463	3,463
Additional Paid in Capital		12,648	12,648	12,648	12,648
Retained Earnings		34,168	35,993	38,203	40,836
Other Equity		(512)	(512)	(512)	(512)
<b>Equity Before MI</b>		<b>49,766</b>	<b>51,591</b>	<b>53,801</b>	<b>56,434</b>
Minority Interest		2,260	2,268	2,277	2,288
<b>Total Equity</b>		<b>52,027</b>	<b>53,859</b>	<b>56,079</b>	<b>58,722</b>

## Board of Directors/Senior Management

Long Ziping	Chairman/ED
Zheng Gaoqing	ED

Sector  
 Issued Shares (m)  
 Market Cap (US\$m)  
 Updated

Equities Research  
 Analyst: Helen Lau

Materials  
 3,463  
 \$6,857  
 20-Jan-20

Growth Data (%)	2018 A	2019 F	2020 F	2021 F
Revenue	5.0	8.2	7.0	4.2
EBITDA	12.4	12.9	12.4	11.4
Operating Income	23.0	10.7	10.1	14.4
Net Income	46.3	4.2	16.5	18.5
EPS Diluted	45.8	3.9	16.5	18.5
DPS	-	4.2	16.5	18.5

Financial Ratios (%)	2018 A	2019 F	2020 F	2021 F
Return on Equity	4.9	4.9	5.4	6.2
Return on Assets	2.3	1.9	2.2	2.5
Return on Capital	4.0	3.8	4.1	4.5
Gross Margin	3.2	3.4	3.4	3.4
EBITDA Margin	2.7	2.8	3.0	3.2
Operating Margin	1.9	2.0	2.0	2.2
Pretax Margin	1.5	1.5	1.6	1.9
Net Income Margin	1.1	1.1	1.2	1.3
ST Debt/Total Debt	11.2	7.0	7.0	7.0
Total Debt/EBITDA (x)	5.8	8.2	7.3	6.5
Net Debt/EBITDA (x)	2.3	3.9	3.5	3.0
EBITDA to Interest Expense (x)	4.1	3.0	3.4	3.8
Total Debt/Equity	64.7	99.7	95.7	91.4
Total Debt/Capital	39.3	49.9	48.9	47.8
Total Debt/Total Assets	32.7	40.8	39.9	39.0
Net Debt/Equity	25.5	47.7	45.9	42.1
Net Debt/Capital	20.3	32.3	31.5	29.6
Current Ratio (x)	1.5	1.2	1.2	1.2
Quick Ratio (x)	0.6	0.5	0.5	0.5
Receivable Days	18.5	14.7	14.8	14.9
Inventory Days	32.8	34.1	38.8	39.3
Payable Days	9.9	12.2	17.5	17.8
Cash Conversion Cycle	41.3	36.6	36.1	36.5

Per Share Data (RMB)	2018 A	2019 F	2020 F	2021 F
Basic EPS	0.70	0.73	0.85	1.00
Diluted EPS	0.70	0.73	0.85	1.00
DPS	0.20	0.21	0.24	0.29
CFS	1.99	0.94	1.06	1.41
BPS	14.37	14.90	15.54	16.30

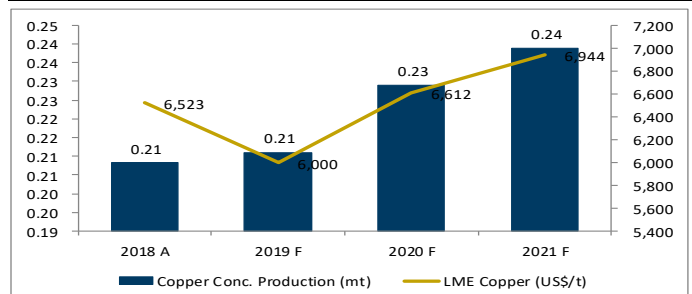
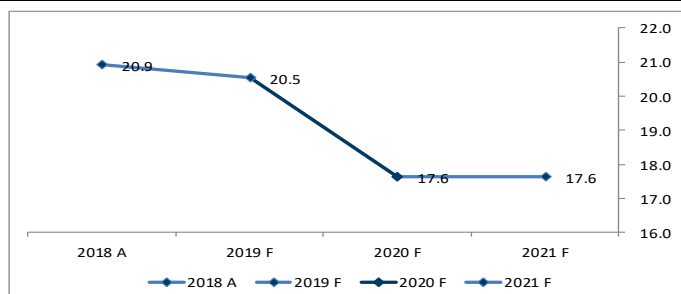
Valuation (x)	2018 A	2019 F	2020 F	2021 F
PE	11.6	13.0	11.2	9.4
PB	0.6	0.6	0.6	0.6
Price to CF	4.1	10.0	8.9	6.7
EV/EBITDA	7.5	11.4	10.1	9.0
Dividend Yield (%)	2.5	2.2	2.6	3.0
Dvd Payout Ratio	29%	29%	29%	29%

## Major Shareholders (%)

Jiangxi Copper Corp	41.6%
China Securities Finance	3.0%
Blackrock	2.4%

Valuation (HK\$)	HK\$
PE	10.58
PB	12.28
EV/EBITDA	12.28
DCF	15.71
Average (rounded)	12.70

Key Operational Data	2018 A	2019 F	2020 F	2021 F
<b>Copper Conc. Production (mt)</b>	<b>0.21</b>	<b>0.21</b>	<b>0.23</b>	<b>0.24</b>
% yoy	-1%	1%	9%	4%
<b>Cathode Production (mt)</b>	<b>1.35</b>	<b>1.50</b>	<b>1.50</b>	<b>1.50</b>
% yoy	0%	11%	0%	0%
<b>Processed Copper Products (mt)</b>	<b>0.88</b>	<b>1.05</b>	<b>1.05</b>	<b>1.05</b>
% yoy	-5%	19%	0%	0%
<b>LME Copper (US\$/t)</b>	<b>6,523</b>	<b>6,000</b>	<b>6,612</b>	<b>6,944</b>
% yoy	6%	-8%	10%	5%
<b>SHFE Copper (Rmb/t)</b>	<b>50,674</b>	<b>47,670</b>	<b>51,484</b>	<b>54,073</b>
% yoy	3%	-6%	8%	5%
<b>COMEX Gold (US\$/oz)</b>	<b>1,269</b>	<b>1,393</b>	<b>1,550</b>	<b>1,550</b>
% yoy	1%	10%	11%	0%
<b>TC/RC fee (US\$ Cent/lb)</b>	<b>20.9</b>	<b>20.5</b>	<b>17.6</b>	<b>17.6</b>
% yoy	-11%	-2%	-14%	0%



## BUY

Current Price

HK\$1.92

Target Price

HK\$2.40

Thursday, 23 January 2020

## MMG Ltd. (1208 HK)

### Operational Improvements

Analyst: Helen Lau

#### Quick Read

MMG is expected to report stronger qoq operational performance in Q4 2019 due to fewer expected logistical disruptions at Las Bambas. For 2019, as guided by the Company, we expect flat copper production growth at Las Bambas and slight cost inflation across its various projects. Earnings upside surprises for the full year 2019 could be related to a production beat at Las Bambas and/or lower than expected unit costs. Looking into 2020, we see future earnings and stronger share price performance to be driven by a stronger copper price outlook, effective cost control and stronger than expected production guidance for its various projects. We revised our 2020 and 2021 copper price forecast from US\$2.67 and US\$2.72 to US\$3.00 and US\$3.15/lb respectively on expected stronger copper demand. Due to a strong positive correlation between copper price and earnings, our 2020 and 2021 earnings forecast increased by 102% and 53% respectively.

#### Key Points

**Solid Q319 operational data lays foundation for Q4 improvements.** MMG's Las Bambas, Kinsevere and Dugald River achieved record volumes of ore milled in Q3 due to improved operational efficiencies. As a result, copper production at Las Bambas in Q3 increased 15% qoq and 12% yoy and zinc production at Dugald River achieved record zinc production of 47.3kt, up 32% qoq. Copper production at Kinsevere was up 12% qoq. MMG expects 2019 copper production at Las Bambas to be at the lower end of the guidance range of 385-405kt implying stronger production at Las Bambas in Q4 compared to Q3.

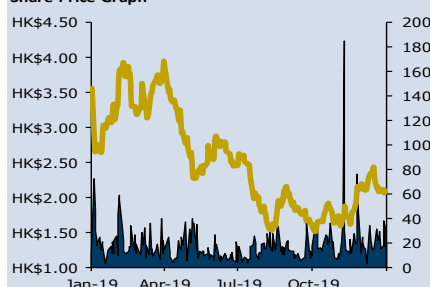
**Earnings turnaround from 2H19.** MMG reported a net loss of US\$81m, attributed to low commodity prices and lower copper production at Kinsevere (declining ore grades) and Las Bambas (logistical disruptions). That said, 2H19 earnings are expected to improve on stronger production as operational efficiencies improve with fewer logistical disruptions. Stronger production will also offset cost pressures to further support a recovery in earnings. Looking into 2020, a stronger copper price outlook based on forecast stronger Chinese demand could further improve earnings. We forecast 2020 earnings to increase by 102% due to the strong positive correlation to copper price supported by operational improvements and solid financial leverage.

#### Recommendation

Argonaut maintains a BUY recommendation with a target price of HK\$2.40 up from HK\$2.35. Our valuation is based on prior valuation matrix of 12x PE, 1.5x PB and 7x EV/EBTIDA on FY20 earnings and DCF valuation of HK\$3.08. Reiterate BUY in view of a 15% upside.

Ticker	1208 HK		
Sector	Materials		
Shares on Issue (m)	8,055		
US\$m			
Market Cap	2,156		
Net Cash (debt)	-7,530		
MI & Preferred Equity	1,639		
Enterprise Value	11,588		
52 wk High/Low (HK\$)	4.04	1.48	
12mth Avg Daily Vol (m)	18		
Key Metrics			
	2018 A	2019 F	2020 F
PE (x)	53.1	-38.1	20.7
PB (x)	2.8	1.7	1.6
EV/EBITDA (x)	7.3	8.4	6.3
Dividend Yield (%)	0.0	0.0	0.0
EBITDA Margin (%)	47.4	40.4	45.3
ROE (%)	5.4	-4.6	7.6
Interest Cover (x)	3.7	3.0	4.0
Net debt to equity (%)	260.0	254.5	217.2
ST Debt/Total Debt (%)	8.4	8.9	9.3
Financials			
US\$m			
	2018 A	2019 F	2020 F
Revenue	3,670	3,241	3,679
EBIT	821	377	712
Net Profit	68	-57	104
Consensus		-126	16
(Below)/Above Consensus		-55%	545%
Growth			
% yoy	2018 A	2019 F	2020 F
Revenue	-2	-12	14
EBITDA	-23	-25	27
Net Profit	-54	-183	-284
Per Share Data			
USD			
	2018 A	2019 F	2020 F
EPS	0.01	-0.01	0.01
BPS	0.16	0.15	0.17
CFPS	0.22	0.14	0.18
DPS	0.00	0.00	0.00
Key DCF-based Valuation Assumptions			
Beta	1.7		
Risk free rate	3.1%		
Equity risk premium	15.6%		
Cost of equity	18.7%		
Cost of debt	4.1%		
Equity to Total Cap ratio	25.9%		
Debt to Total Cap ratio	74.1%		
WACC	7.9%		
Terminal Growth	0.0%		
DCF (HK\$)	3.08		

Share Price Graph



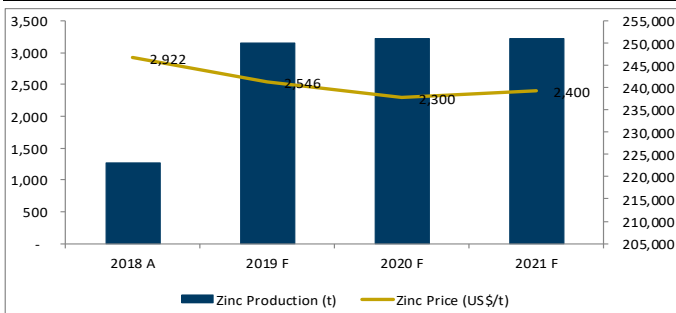
## MMMG (1208 HK Equity)

<b>Recommendation</b>	<b>BUY</b>				
<b>Current Price</b>	<b>HK\$2.08</b>				
<b>Target Price</b>	<b>HK\$2.40</b>				
<b>Year-end</b>	<b>As of 31 December</b>				
<b>Profit &amp; Loss</b>	<b>US\$m</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
Revenue		3,670	3,241	3,679	3,936
Cost of Revenue		2,461	1,792	1,856	1,927
<b>Gross Profit</b>		<b>1,209</b>	<b>1,450</b>	<b>1,823</b>	<b>2,009</b>
Operating Expenses		389	1,072	1,111	1,143
Operating Income (Loss)		821	377	712	866
Non-Operating Income/Loss		515	414	390	352
Interest Expense		473	433	411	370
Interest Income		7	7	9	6
<b>Pretax Income/(Loss)</b>		<b>306</b>	<b>-37</b>	<b>321</b>	<b>514</b>
Income Tax		170	48	166	230
Net Income Incl. MI		137	-85	155	285
Minority Interest		69	-28	51	94
<b>Net Income</b>		<b>68</b>	<b>-57</b>	<b>104</b>	<b>191</b>
EBIT		821	377	712	866
Depreciation & Amortization		918	933	953	973
<b>EBITDA</b>		<b>1,739</b>	<b>1,310</b>	<b>1,665</b>	<b>1,840</b>
Tax rate		55%	-131%	52%	45%

<b>Cash Flow</b>	<b>US\$m</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
Net Income		68	(57)	104	191
Depreciation & Amortization		918	933	953	973
Non-Cash Items		718	399	454	458
Chg in Working Capital		27	(156)	(47)	(29)
<b>Cash from Operating Activities</b>		<b>1,732</b>	<b>1,119</b>	<b>1,464</b>	<b>1,593</b>
Change in Fixed & Intangible Assets		(333)	(450)	(450)	(450)
Acquisition of Fixed & Intangibles		(338)	(450)	(450)	(450)
Net Cash from Acq & Divestures		234	-	-	-
<b>Cash from Investing Activities</b>		<b>(105)</b>	<b>(450)</b>	<b>(450)</b>	<b>(450)</b>
Cash From (Repayment) Debt		(1,197)	(392)	(403)	(1,103)
Cash (Repurchase) of Equity		9	37	37	37
Other Financing Activities		(746)	(426)	(403)	(364)
<b>Cash from Financing Activities</b>		<b>(1,961)</b>	<b>(782)</b>	<b>(769)</b>	<b>(1,430)</b>
Net Changes in Cash		(334)	(113)	245	(287)
Cash BEG		936	602	489	734
Cash END		602	489	734	447
Capex		(332)	(450)	(450)	(450)
<b>Free Cash Flow</b>		<b>1,399</b>	<b>669</b>	<b>1,014</b>	<b>1,143</b>

<b>Balance Sheet</b>	<b>US\$m</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
Cash & Cash Equivalents		602	489	734	447
Accounts & Notes Receivables		286	324	368	394
Inventories		204	269	278	289
Other ST Assets		182	182	182	182
<b>Total current Assets</b>		<b>1,273</b>	<b>1,263</b>	<b>1,562</b>	<b>1,311</b>
PPE		10,898	10,415	9,912	9,388
LT Investments & Receivables		3	3	3	3
Other LT Assets		1,082	1,082	1,082	1,082
<b>Total Noncurrent Assets</b>		<b>11,983</b>	<b>11,500</b>	<b>10,997</b>	<b>10,473</b>
<b>Total Assets</b>		<b>13,255</b>	<b>12,763</b>	<b>12,558</b>	<b>11,784</b>
Payables & Accruals		527	474	481	488
ST Debt		685	685	685	685
Other ST Liabilities		214	214	214	214
<b>Total Current Liabilities</b>		<b>1,426</b>	<b>1,373</b>	<b>1,380</b>	<b>1,387</b>
LT Debt		7,446	7,054	6,651	5,548
Other LT Liabilities		1,487	1,487	1,487	1,487
<b>Total Noncurrent Liabilities</b>		<b>8,933</b>	<b>8,541</b>	<b>8,138</b>	<b>7,035</b>
<b>Total Liabilities</b>		<b>10,359</b>	<b>9,915</b>	<b>9,518</b>	<b>8,422</b>
Common Stock		2,911	2,948	2,984	3,021
Retained Earnings		244	188	292	482
Other Equity		(1,898)	(1,898)	(1,898)	(1,898)
<b>Equity Before MI</b>		<b>1,257</b>	<b>1,237</b>	<b>1,378</b>	<b>1,605</b>
Minority Interest		1,639	1,611	1,663	1,756
<b>Total Equity</b>		<b>2,896</b>	<b>2,848</b>	<b>3,040</b>	<b>3,362</b>

	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
% of Las Bambas Copper in Revenue	7026%	6843%	7203%	7284%
% of Dugald River Zinc in Revenue	674%	1029%	833%	807%
% of Kinsevere Copper in Revenue	1407%	1183%	1148%	1127%
% of Las Bambas Copper in EBITDA	7659%	8045%	8439%	8468%
% of Dugald River Zinc in EBITDA	500%	815%	589%	553%
% of Kinsevere Copper in EBITDA	980%	1070%	742%	706%



## Sector

Issued Shares (m)  
Market Cap (US\$m)

## Updated

<b>Growth Data (%)</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
Revenue	(2.2)	(11.7)	13.5	7.0
EBITDA	(22.9)	(24.7)	27.1	10.5
Operating Income	(37.9)	(54.0)	88.6	21.7
Net Income	(53.6)	(182.9)	(283.7)	83.2
EPS Diluted	(53.6)	(183.3)	(283.7)	83.2
DPS	n.a.	n.a.	n.a.	n.a.

<b>Financial Ratios (%)</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
Return on Equity	5.4	(4.6)	7.6	11.9
Return on Assets	0.5	(0.4)	0.8	1.6
Return on Capital	3.2	8.6	3.4	5.1
Gross Margin	32.9	44.7	49.6	51.0
EBITDA Margin	47.4	40.4	45.3	46.7
Operating Margin	22.4	11.6	19.3	22.0
Pretax Margin	8.3	(1.1)	8.7	13.1
Net Income Margin	1.9	(1.7)	2.8	4.8
ST Debt/Total Debt	8.4	8.9	9.3	11.0
Total Debt/EBITDA (x)	4.7	5.9	4.4	3.4
Net Debt/EBITDA (x)	4.3	5.5	4.0	3.1
EBITDA to Interest Expense (x)	3.7	3.0	4.0	5.0
Total Debt/Equity	280.8	271.7	241.3	185.4
Total Debt/Capital	73.7	73.1	70.7	65.0
Total Debt/Total Assets	61.3	60.6	58.4	52.9
Net Debt/Equity	260.0	254.5	217.2	172.1
Net Debt/Capital	72.2	71.8	68.5	63.3
Current Ratio (x)	0.9	0.9	1.1	0.9
Quick Ratio (x)	0.6	0.6	0.8	0.6
Receivable Days	25.9	34.3	34.3	35.3
Inventory Days	37.1	48.1	53.8	53.7
Payable Days	32.5	40.4	35.7	35.6
Cash Conversion Cycle	30.6	42.1	52.4	53.4

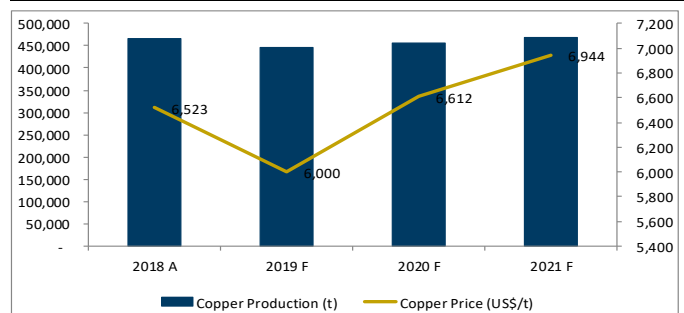
<b>Per Share Data (US\$)</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
Basic EPS	0.01	(0.01)	0.01	0.02
Diluted EPS	0.01	(0.01)	0.01	0.02
DPS	0.00	0.00	0.00	0.00
CFS	0.22	0.14	0.18	0.20
BPS	0.16	0.15	0.17	0.20

<b>Valuation</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
PE (x)	53.1	-38.1	20.7	11.3
PB (x)	2.8	1.7	1.6	1.3
Price to CF (x)	3.6	1.9	1.5	1.4
EV/EBITDA (x)	7.3	8.4	6.3	5.3
Dividend Yield (%)	0.0	0.0	0.0	0.0
Divident Payout Ratio (%)	0.0	0.0	0.0	0.0

<b>Major Shareholders (%)</b>	
China Minmetals Corp	72.59%

<b>Senior Management</b>	<b>Position</b>
Geoffrey Gao	CEO/ED
Ross Carroll	CFO
Troy Hey	Executive GM

<b>Key Operational Data</b>	<b>2018 A</b>	<b>2019 F</b>	<b>2020 F</b>	<b>2021 F</b>
<b>Copper Production (t)</b>	<b>466,475</b>	<b>445,851</b>	<b>457,227</b>	<b>468,944</b>
% yoy	-22%	-4%	3%	3%
<b>Las Bambas Copper Production (t)</b>	<b>385,299</b>	<b>379,195</b>	<b>390,571</b>	<b>402,288</b>
% yoy	-15%	-2%	3%	3%
<b>Zinc Production (t)</b>	<b>223,041</b>	<b>250,131</b>	<b>251,045</b>	<b>251,045</b>
% yoy	198%	12%	0%	0%
<b>Dugald River Zinc Production (t)</b>	<b>147,320</b>	<b>164,172</b>	<b>164,172</b>	<b>164,172</b>
% yoy	n.a.	11%	0%	0%
<b>Copper Price (US\$/t)</b>	<b>6,523</b>	<b>6,000</b>	<b>6,612</b>	<b>6,944</b>
% yoy	6%	-8%	10%	5%
<b>Zinc Price (US\$/t)</b>	<b>2,922</b>	<b>2,546</b>	<b>2,300</b>	<b>2,400</b>
% yoy	1%	-13%	-10%	4%
<b>C1 cost at Las Bambas (US\$/lb)</b>	<b>1.190</b>	<b>1.250</b>	<b>1.275</b>	<b>1.301</b>
% yoy	20%	5%	2%	2%





## APPENDIX 1 – ASX Listed Copper Companies

ASX Listed Copper Explorers		
Ticker	Name	Description
AIV	ActivEX	Holds a number of JORC compliant copper and gold projects in the northwest and southeast of Queensland. The company continues to undertake exploration activities, with rock chip sampling identifying several additional high grade copper and gold targets.
AIC	AIC Mines	A copper/gold focused explorer with its Marymia Project located within trucking distance of the Plutonic Gold Mine and the DeGrussa Copper Mine. In 2019, Intrepid Mines merged with AIC.
AL8	Alderan Resources	Focused on exploration of the historical Frisco Copper project in Beaver County, Utah (US).
AQX	Alice Queen Limited	A gold / copper exploration company with early stage exploration projects in New South Wales, Queensland and Horn Island (in the Torres Strait). Drilling within the Yarindury project in NSW has commenced. Exploration in NSW is targeting large scale copper/gold porphyry and the targets sit along strike from Cadia and adjacent to Alkane's Boda discovery. In 2019 AQX entered into a multi stage earn in joint venture with St Barbara (SBM:ASX) for the Horn Island project.
AMG	AusMex	Holds licences for gold/copper in the Mount Bryan-Red Banks-World's End region near Burra in South Australia. Recent surveys identified the first of three target areas at Burra and large conductive structures 15kms in width.
AQD	AusQuest	An exploration company with exploration assets in both Peru and Australia. The flagship Cerro de Fierro IOCG project is subject to an agreement with South32 (S32:ASX) to fund ongoing exploration through an earn-in structure.
ARE	Argonaut Resources	An IOCG exploration company holding 30% of the Aeris Resources (AIS:ASX) Torrens East project in South Australia and 90% of the Lumwana West Project in Zambia, a prospective bulk tonnage project with low to medium grade copper cobalt potential.
AUQ	Alara Resources	An exploration company focused on early stage exploration of copper-gold projects in Oman and is in the development phase of a zinc-copper project in Saudi Arabia, however in 2015 the licence to this project was cancelled and will work with relevant parties to reinstate the licence.
AZY	Antipa Minerals	An exploration company focused on the Paterson Province of Western Australia. The Paterson Province hosts the Telfer and Nifty mines. Antipa is currently undertaking exploration activities at the Citadel Project, which is subject to a staged farm-in by Rio Tinto (RIO:ASX).
AVQ	Axiom Mining	Holds a portfolio of exploration tenements in the Asia-Pacific region that includes prospective gold, silver and copper tenements in the Solomon Islands and North Queensland, Australia.
BOA	Boadicea Resources	A base and battery mineral exploration company with its flagship Symonds Hill exploration licence located ~200km southeast of Kalgoorlie, Western Australia. A recent EM survey indicated multiple significant EM conductors of potential copper mineralisation.
BYH	Bryah Resources	An exploration company focussed on exploration for high-grade copper-cold and manganese in two project areas within the Bryah Basin and Gabanintha in the Meekatharra region of Western Australia.
CAE	Cannindah Resources	Holds four projects in Queensland with a current focus on the Mt Cannindah which is a gold bearing porphyry copper system with a current total resource of 5.5Mt at 0.92% Cu, 0.34g/t Au and 14.9g/t Ag.
CBY	Canterbury Resources	Holds a portfolio of early stage exploration projects in Australia, Papua New Guinea and Vanuatu that are prospective for porphyry copper-gold and epithermal gold-silver deposits.
CCZ	Castillo Copper	A base metal explorer holding three assets, including the historical Canagai Copper Mine, historically one of Australia's highest grade copper mines with a JORC inferred resource of 3.2Mt at 3.35% Cu. Additional projects include the Mt Oxide project in the Mt Isa district (NW Queensland) and several assets in Zambia. Following the resumption of exploration activities at Cangai Copper Mine, Castillo looks to progress to a BFS and monetise historic stockpiles.
COY	Coppermoly	Holds several exploration licences on the Island of New Britain within Papua New Guinea. The Company holds a Maiden JORC indicated resource of 7.0 Mt at 1.00% Cu and a Maiden JORC inferred resource of 34.4Mt at 0.69% Cu at the Mt Nakru project.
CWX	Carawine Resources	A precious and base metal exploration company with exploration licences in Western Australia and in Victoria. The Paterson Project in the Paterson Province of Western Australia encompasses a number of tenements, several of which are the subject of JV agreements with Rio Tinto (RIO:ASX) and the Fortescue Metals Group (FMG:ASX).
CVV	Caravel Minerals	Holds the Caravel Copper Project in the Yilgarn Craton within the Wheat belt of Western Australia. Drilling has confirmed thick intersections of copper mineralisation at the Bindi Hinge zone, an interpreted deposit within a larger porphyry style mineralised belt. The Caravel project holds a JORC complaint indicated resource of 225Mt at 0.36% Cu and a JORC complaint inferred resource of 147Mt at 0.34% Cu.
CZN	Corazon Mining	Holds two projects, the Lynn Lake Project in Canada and the Mt Gilmore project in New South Wales in Australia. The Lynn Lake project hosts a JORC compliant indicated resource of 12.9M at 0.33% Cu and a JORC compliant inferred resource of 3.4Mt at 0.33% Cu.
CYM	Cyprium Metals	Its Cue (Hollandaire) Project contains a JORC compliant Indicated resource of 1.9Mt at 2.0% Cu with additional exploration potential and further test work is being undertaken to expand the resource with a view to commence feasibility studies.
DRE	Dreadnought Resources	The early stage Terraji-Yampi Project is situated in the north west of Western Australia on Commonwealth ground and administered by the Department of Defence, with exploration activities

## ASX Listed Copper Explorers

Ticker	Name	Description
		ongoing for nickel, copper and gold. The region contains outcropping mineralisation and recently defined and untested EM anomalies for further exploration activities.
EM2	Eagle Mountain Mining	Recently acquired the historical underground Oracle Ridge mine in Tuscon Arizona with a NI43-101 compliant resource 186kt contained copper. Eagle Mountain also holds the Silver Mountain project with three prospects for further exploration activities. Exploration is expected to continue at Oracle Ridge to expand the existing resource with mining studies to commence following this.
FNT	Frontier Resources	Focussed on exploration activities for precious and base metals within three granted exploration licences, Bulago, Muller Range and Tolukuma, the 'Rim of Fire' in Papua New Guinea. Exploration activities continue to be focused around the most advanced Tolukuma licence adjacent to the historical Tolukuma Gold Mine.
GCR	Golden Cross Resources	Holds a number of exploration projects within Australia and Panama. The Company also is engaged in a number of joint venture projects. The Company is focused on its Copper Hill copper-gold project in central NSW holding a global resource of 87Mt at 0.32% Cu and the subject of a Pre-Feasibility Study.
HLX	Helix Resources	Holds a number of projects in South Australia, New South Wales and in Chile. The Company's main focus is its flagship Collerina Copper discovery located in Central NSW where drilling is underway to further define the mineralisation that exists.
HGO	Hillgrove Resources	Operated the Kanmantoo Copper Mine, however this has reached the end of its economic life. Exploration continues to extend the Kanmantoo underground mine and regionally in South Australia.
HOR	Horseshoe Metals	Its primary project is the historic Horseshoe Lights mine in Western Australia. This project holds a global resource of 12.85Mt at 1.0% copper and low-grade stockpiles with ~8,800t contained copper. The Kumarina project is its second project within the same region, again a historically operating asset with a total resource of 835kt at 1.3% Copper.
IVR	Investigator Resources	Holds four projects in South Australia with exploration activities targeting precious and base metals. Recently announced a binding Heads of Agreement with OZ Minerals (OZL:ASX) to fund up to A\$10m of a three stage drilling program at the Maslins IOCG Project.
KLH	Kalia Limited	An early stage exploration company focused on the Island of Bougainville within Papua New Guinea. In late December 2019, President Momis indefinitely suspended their exploration licences stating they had "miserably failed to address its social issues and to fulfil its corporate social responsibility"
KMT	Kapore Metals	Holds exploration assets within the Kalahari Copper belt in Botswana and Namibia, along trend from the Sandfire T3 asset. Exploration activities have commenced on a number of early stage targets.
KTA	Krakatoa Resources	A junior exploration company with a number of tenements across Australia. The recently acquired Belgravia Porphyry Project lies within the Molong Volcanic Belt between Newcrest's Cadia Mine and Alkane Resources' Northern Molong Porphyry project. The Company is planning ground-based exploration activities.
MAG	Magmatic	In 2013, MAG acquired 4 projects from Goldfields in New South Wales, one of which is ~2kms from Alkane's recent Boda copper-gold porphyry discovery and in one of Australia's largest gold-copper porphyry regions.
MEP	Minotaur Exploration	Is actively exploring IOCG style targets in Australia. Their portfolio includes three separate JV's with OZ Minerals (OZL:ASX) in the Cloncurry region of Queensland, two exploration projects in central Queensland and two projects in South Australia.
NYC	New World Resources	The acquisition of the Tererro Cu-Au-Zn VMS project in New Mexico provides a long term growth opportunity in Arizona in close proximity to current copper porphyry mines and historically mined VMS deposits.
PKO	Peako	A primary focus of exploring for high grade copper deposits at its early stage East Kimberley and Paterson Province tenements.
PEX	Peel Mining	Holds a number of advanced exploration projects in New South Wales. The Mallee Bull has a Maiden JORC compliant indicated resource of 620kt at 2.22% CuEq and a JORC compliant inferred resource of 3.3Mt at 2.8% CuEq. Drilling at the Wagga Tank / Southern Nights project has continued to return high grade polymetallic intercepts.
PNX	PNX Metals	A precious and base metals explorer with exploration licences within the Yorke Peninsula and holds a farm-in agreement with AusMex for the Burra project. It completed a PFS for the Hayes Creek Project in the Northern Territory indicating a 6.5yr mine generating a NPV of A\$133m. This project holds a JORC compliant mineral resource containing 6.65kt copper within a greater resource of 721.5koz AuEq.
RDS	Redstone Resources	Its flagship Tollar Project is located the West Musgrave region of Western Australia. With a maiden Resource of 3.8Mt @ 1.0% copper, for 38kt contained copper. The Tollar Project also has a Conceptual Exploration Target of 31 to 47Mt at a conceptual grade range of 0.8% to 1.3% Cu, containing 259kt to 626kt copper. Drilling activities has been undertaken on less than 2% of the licence holding, with room for further discoveries.
RDM	Red Metal	Holds multiple exploration targets across Australia, holding a "Greenfields Discovery Alliance" with OZ Minerals with the aim to fast track a discovery in Australia.
RIE	Riedel Resources	Focused on the gold and copper Marymia Project in Western Australia, 55kms NE of the DeGrussa Copper Mine. Recently terminated its JV agreement with respect to the Carmenes Project in Spain to focus on the Marymia Project.
RTG	RTG Mining	Holds exploration projects across the globe including the recently acquired Chanach Project in Kyrgyz Republic, the Mabilo Project in the Philippines and the Punguna Project in Bougainville. The Mabilo Project remains under arbitration with respect to the validity of termination of the JV agreement



## ASX Listed Copper Explorers

Ticker	Name	Description
		between its partner Galeo Equipment Corporation. Additionally, the Punguna Project in PNG remains under indefinite suspension due to environmental issues.
SCI	Silver City Minerals	Holds a significant number of projects, including its flagship Copper Bow project at Broken Hill in New South Wales.
SRI	Sipa Resources	Holds exploration projects in the Paterson Province of Western Australia, in Northern Uganda and several others within northern Australia. Sipa's exploration activity discovered a significant copper rich, polymetallic system called Obelisk as well as other potential polymetallic systems in the area requiring further testing.
STM	Sunstone Metals	Holds exploration projects in Ecuador, Finland and a significant strategic equity investment in Copperstone Resources AB of Sweden. Exploration at the Bramaderos gold-copper project in Ecuador indicates a region that is highly prospective for the discovery of large porphyry gold-copper systems as well as high-grade epithermal gold systems.
SUH	Southern Hemisphere Mining	Holds several early stage exploration projects in Chile. In the second half of 2019, Hudbay Minerals withdrew from its earn-in agreement for the Llahuin Porphyry Copper/Gold Project.
SVY	Stavely Minerals	Holds several projects within Australia, with the flagship Stavely Project situated in western Victoria on the Stavely tablelands. At the Stavely Project the Thursday's Gossan Prospect holds an estimated copper estimated at 28Mt at 0.4% and 110kt contained copper. The Company completed a Conceptual Study for the copper concentrate from the Thursday deposit that demonstrated positive outcomes with respect to net revenue and NPV as well as an attractive IRR to proceed to a Scoping Study.
TAR	Taruga Gold	An exploration company with two projects in the Democratic Republic of Congo, the Mwilu project (mineralisation over 700m down to 280m with potential strike length of 2km) and Kamilobe project (mineralisation within multiple stacked horizons over a strike length of >1km).
TAS	Tasman Resources	Tasman holds three projects within relatively close proximity to and adjacent to BHP Billiton's Olympic Dam deposit in South Australia. Tasman continues to explore for IOCGU and epithermal deposits. Tasman has finalised a JV agreement with Fortescue Mining (FMG:ASX) for the Lake Torrens project to the north of Olympic Dam.
TLM	Talisman Mining	TLM's Lachlan copper-gold project is located in the Lachlan Ford Belt in NSW. It has two other (gold and nickel) projects across Australia. Exploration activities at the Blind Calf have intersected high grade copper mineralisation and exploration at the Noisy Ned prospect have detected anomalies and subsequently intersected copper mineralisation.
XAM	Xanadu Mines	Xanadu's scoping study at its Kharmagtai Open Pit Copper-Gold Project has confirmed its strategy to explore for high-value large copper porphyry systems in Mongolia. Following the completion of a Scoping Study, with an upgraded resource of 598Mt containing 1.9Mt Cu, Xanadu outlined exploration targets for each of its deposits and has also identified improved metallurgical recoveries.

## ASX Listed Copper Developers

Ticker	Name	Description
AML	Aeon Metals	An Australian focused explorer and developer holds an advanced copper cobalt Walford Creek Project located to the north of Mt Isa in Queensland. The Vardy/Marley deposit (within the Walford Project) has a JORC compliant measured resource of 6.2Mt at 1.15% Cu, an indicated resource of 11.3Mt at 1.00% Cu and an inferred resource of 0.9Mt at 1.04% Cu. The total resource is 18.4Mt at 1.05% Cu and the global resource, including a cobalt peripheral zone, is estimated 35.8Mt at 1.94% CuEq over 3.6km strike. A Pre-Feasibility Study of Walford Creek is underway, targeted for completion following a Scoping Study, which outlined a potential 3.5Mt open pit and underground operation with a forecast mine life of 11 years.
BOC	Bougainville Copper	Its primary focus remains on the reclamation and operation of the Panguna copper mine that it operated from 1971 to 1989. It is now proceeding with judicial review proceedings after the Supreme Court in Papua New Guinea dismissed its application for leave to appeal.
CDU	Cudeco	The Rockland Copper project in Cloncurry, Queensland, holds an Ore Reserve of 11.6Mt at 0.87% Cu. A subsequent Feasibility Study indicated a first stage development project producing ~18kt Cu from both underground and open pit operations utilising a 2.7Mtpa plant (capital cost of ~A\$640m) with a mine life of 10yrs. In August 2019 the company was placed into Administration.
HAV	Havilah Resources	An explorer and developer targeting production of 30Kt Cu and 72Koz Au pa from existing resources at the Kilkaroo project. Holds a number of exploration tenements within the Curnamona Craton in South Australia that has been successful in delineating a JORC compliant mineral resource with metal inventory including 1.3Mt Cu, 3.15 Moz Au, 31.6Kt Co and 451 Mt of iron ore.
HCH	Hot Chilli	A copper developer with an advanced portfolio of Chilean projects. The most advanced project is the Productora hosting a resource base of 1.5Mt Cu and 1.0Moz Au. Drilling at the Cortadera project continues to return encouraging copper/gold intersections that indicate a potential underground bulk tonnage opportunity.
KGL	KGL Resources	Focused on the Jervois Project in the Northern Territory holding a JORC compliant indicated resource of 16.3Mt at 1.57% Cu for 255Kt of contained copper and a JORC compliant inferred resource of 10.3Mt at 1.31% Cu for 136Kt of contained copper.
ORN	Orion Minerals	An exploration and developer with assets in the Northern Cape Province of South Africa and holds a JV with The Independence Group (IGO:ASX) within the Fraser Range in Western Australia as well as other exploration assets within Australia. Its flagship Prieska Copper-Zinc Project in South Africa hosts a VMS resource of 30Mt at 1.2% Cu and 3.7% Zn. The BFS identified a 10yr mine with a 2.4Mtpa underground and open pit mine to deliver payable metal production of 189kt of copper and 580kt of zinc concentrates.
RCP	Redbank Copper	Focused on the Redbank and Millers Creek Projects in Australia. Currently under voluntary suspension following a strategic review of the Company which identified a risk of forfeiture of key mining tenements within the Redbank Project for non-payment of statutory rent to the Northern Territory government. The Company obtained a loan facility to enable the payment of outstanding rent on tenements.
RXM	Rex Minerals	An exploration and developer that holds the Hillside development project in the Yorke Peninsula, South Australia and recently acquired the Hog Ranch Project in Nevada, United States. The Hillside project is the subject of an Extended Feasibility Study which identifies a 13+ year open pit mine based on an Ore Reserve of 82Mt, processing 6Mt for 35kt Cu and 25koz Au pa requiring A\$480m capital. Hog Ranch released a Maiden JORC compliant Inferred Resource of 44Mt Au.
VXR	Venturex Resources	The Sulphur Springs project holds a JORC compliant resource of 17Mt at 1.3% copper. A completed Definitive Feasibility Study indicated an ore reserve of 8.5Mt at 1.4% copper, processed through a 1.25Mt process plant for 10 years, generating a pre-tax NPV of A\$472m and an IRR of 51% with a modest capital expenditure of A\$146m.

**ASX Listed Copper Producers**

<b>Ticker</b>	<b>Name</b>	<b>Description</b>
AIS	Aeris	An established copper mining and exploration company with a production asset, Tritton Copper, in New South Wales (produced 26.9Kt Cu in FY2019). Tritton inventory includes ore reserves of 6.7Mt at 1.5% Cu and mineral resources of 19.8Mt at 1.5% Cu with an underground mine life of 4 years utilising a 1.8Mtpa plant. In addition, AIS holds 70% of the Torrens Exploration project in South Australia with a magnetic and gravity anomaly zone with a footprint larger than Olympic Dam
C6C	Copper Mountain Mining	The Copper Mountain mine is the flagship asset, located within southern British Columbia. Following a plant upgrade and additional resources, the low grade, open pit is expected to produce ~52ktpa Cu for 31 years with a plant throughput of 45ktpd (~16.5Mtpa). Additional growth projects (Queensland and Cameroon) could provide organic production growth.
MLX	Metals X	A diversified base metals producer operating assets across Australia. Its Nifty copper asset was placed under care and maintenance due to continued operational issues. The Company intends to focus on its tin operations.
OZL	OZ Minerals	One of Australia's largest copper producers, recently completing the construction of its Carrapateena underground mines. Additionally, OZL holds a significant portfolio of assets in Australia, South America and Mexico that span from early stage exploration to study phases and operating / producing assets. OZ generates cash from operations and has a history of paying dividends to shareholders.
RVR	Red River Resources	Currently produces zinc, lead and copper concentrates at its Thalanga site in Queensland. It continued to undertake further exploration activities at the site to expand its resources.
SFR	Sandfire Resources	Sandfire Resources currently produces from its flagship DeGrussa Mine in Western Australia however given the relatively limited mine life of this asset, SFR holds development and exploration assets in Botswana and in the United States. The Company generates strong cash flows and has a history of paying dividends to shareholders.
TGS	Tiger Resources	Holds a cathode producing asset, Koipoi Copper Project, an advanced exploration project, the Lupoto Project, which holds a resource of 14.7Mt at 1.4% Cu for 200kt of contained copper and the prospective exploration area called La Patience, all within the Democratic Republic of Congo. Tiger announced a Creditors Scheme of Arrangement where a large proportion of its US\$221.1m debt will be reduced to US\$70m via the issue of shares to its senior lenders. This Scheme of Arrangement will result in current equity holders holding 0.76% of post-scheme diluted capital.

**RESEARCH:**

**Ian Christie** | Head of Research  
+61 8 9224 6872 ichristie@argonaut.com

**Matthew Keane** | Director, Metals & Mining Research  
+61 8 9224 6869 mkeane@argonaut.com

**James Wilson** | Analyst, Metals & Mining Research  
+61 8 9224 6835 jwilson@argonaut.com

**Helen Lau** | Analyst, Metals & Mining Research  
+852 3557 4804 hlau@argonaut.com

**Michael Eidne** | Director, Research  
+61 8 9224 6831 meidne@argonaut.com

**Jeff Sansom** | Associate, Research  
+61 8 9224 6890 jsansom@argonaut.com

**INSTITUTIONAL SALES - PERTH:**

**Chris Wippl** | Executive Director, Head of Institutional Sales  
+61 8 9224 6875 cwippl@argonaut.com

**Damian Rooney** | Director Institutional Sales  
+61 8 9224 6862 drooney@argonaut.com

**John Santul** | Consultant, Sales & Research  
+61 8 9224 6859 jsantul@argonaut.com

**Ben Willoughby** | Institutional Dealer  
+61 8 9224 6876 bwiloughby@argonaut.com

**Josh Welch** | Institutional Dealer  
+61 8 9224 6868 jwelch@argonaut.com

**George Ogilvie** | Institutional Dealer  
+61 8 9224 6871 gogilvie@argonaut.com

**INSTITUTIONAL SALES - HONG KONG:**

**Damian Rooney** | Director Institutional Sales  
+61 8 9224 6862 drooney@argonaut.com

**CORPORATE AND PRIVATE CLIENT SALES:**

**Glen Colgan** | Managing Director, Desk Manager  
+61 8 9224 6874 gcolgan@argonaut.com

**Kevin Johnson** | Executive Director, Corporate Stockbroking  
+61 8 9224 6880 kjohnson@argonaut.com

**James McGlew** | Executive Director, Corporate Stockbroking  
+61 8 9224 6866 jmcglew@argonaut.com

**Geoff Barnesby-Johnson** | Senior Dealer, Corporate Stockbroking  
+61 8 9224 6854 bj@argonaut.com

**Philip Grant** | Senior Dealer, Corporate Stockbroking  
+61 8 9224 6834 pgrant@argonaut.com

**Rob Healy** | Dealer, Private Clients  
+61 8 9224 6873, rhealy@argonaut.com

**Cameron Prunster** | Dealer, Private Clients  
+61 8 9224 6853 cprunster@argonaut.com

**James Massey** | Dealer, Private Clients  
+61 8 9224 6849 jmassey@argonaut.com

**Chris Hill** | Dealer, Private Clients  
+61 8 9224 6830, chill@argonaut.com

**Harry Massey** | Dealer, Private Clients  
+61 8 9224 6829, hmassey@argonaut.com

**Minotaur Exploration**

Argonaut participated in the Placement to raise \$1.5M in October 2019 and received fees commensurate with this service.

**Merdeka Copper Gold TBK**

Argonaut acted as Financial Adviser to Eastern Field Developments Limited ("EFD") which is a subsidiary of PT Merdeka Copper Gold TBK ("MDKA") in relation to EFD's takeover of Finders Resources Limited and received fees commensurate with this service. Argonaut acted as a Placing Agent to raise approximately US\$61.5 million (at an issue price of IDR3,980 per share) in July 2019 and received fees commensurate with this service. Argonaut continues to act as Financial Adviser to MDKA and will receive fees commensurate with this service.

**Snapshot Research**

**Valuation / Target Price:** The report may or may not contain a valuation / target price.

**Recommendation:** If there is a valuation / target price, there will be a recommendation. In the absence of a valuation / target price, there may or may not be a recommendation. In all cases, where views / opinions are expressed, the analyst will have a reasonable basis for doing so.

**Coverage:** A Company is only considered formally covered when a recommendation has been provided. If coverage is to cease, this will be disclosed in a coverage update report within a suitable time period.

**Research frequency:** Commentary may be infrequent, ad hoc, and newsflow dependent. If the Company is not formally covered (i.e. there is no recommendation), the report may be a one-off. Recommendations and opinions should only be considered valid at the date of the report.

**Risk:** Where Snapshot Research is associated with a Company at an early stage of its life cycle, earnings / financial / funding risks should be considered high and investment speculative.

**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).

**For U.S. persons only**

This research report is a product of Argonaut Securities Pty Limited, which is the employer of the research analyst(s) who has prepared the research report. The research analyst(s) preparing the research report is/are resident outside the United States (U.S.) and are not associated persons of any U.S. regulated broker-dealer and therefore the analyst(s) is/are not subject to supervision by a U.S. broker-dealer, and is/are not required to satisfy the regulatory licensing requirements of FINRA or required to otherwise comply with U.S. rules or regulations regarding, among other things, communications with a subject company, public appearances and trading securities held by a research analyst account.

This report is intended for distribution by Argonaut Securities Pty Limited only to "Major Institutional Investors" as defined by Rule 15a-6(b)(4) of the U.S. Securities and Exchange Act, 1934 (the Exchange Act) and interpretations thereof by U.S. Securities and Exchange Commission (SEC) in reliance on Rule 15a 6(a)(2). If the recipient of this report is not a Major Institutional Investor as specified above, then it should not act upon this report and return the same to the sender. Further, this report may not be copied, duplicated and/or transmitted onward to any U.S. person, which is not the Major Institutional Investor.

In reliance on the exemption from registration provided by Rule 15a-6 of the Exchange Act and interpretations thereof by the SEC in order to conduct certain business with Major Institutional Investors, Argonaut Securities Pty Limited has entered into an agreement with a U.S. registered broker-dealer, Marco Polo Securities Inc. ("Marco Polo"). Transactions in securities discussed in this research report should be effected through Marco Polo or another U.S. registered broker dealer.

**Hong Kong Distribution Disclosure**

This material is being distributed in Hong Kong by Argonaut Securities (Asia) Limited which is licensed (AXO 052) and regulated by the Hong Kong Securities and Futures Commission. Further information on any of the securities mentioned in this material may be obtained on request, and for this purpose, persons in the Hong Kong office should be contacted at Argonaut Securities (Asia) Limited of Unit 701, 7/F, Henley Building, 5 Queen's Road Central, Hong Kong, telephone (852) 3557 48000.

**General Disclosure and Disclaimer**

This research has been prepared by Argonaut Securities Pty Limited (ABN 72 108 330 650) ("ASPL") or by Argonaut Securities (Asia) Limited ("ASAL") for the use of the clients of ASPL, ASAL and other related bodies corporate (the "Argonaut Group") and must not be copied, either in whole or in part, or distributed to any other person. If you are not the intended recipient, you must not use or disclose the information in this report in any way. ASPL is a holder of an Australian Financial Services License No. 274099 and is a Market Participant of the Australian Stock Exchange Limited. ASAL has a licence (AXO 052) to Deal and Advise in Securities and Advise on Corporate Finance in Hong Kong with its activities regulated by the Securities and Futures Ordinance ("SFO") administered by the Securities and Futures Commission ("SFC") of Hong Kong.

Nothing in this report should be construed as personal financial product advice for the purposes of Section 766B of the Corporations Act 2001 (Cth). This report does not consider any of your objectives, financial situation or needs. The report may contain general financial product advice and you should therefore consider the appropriateness of the advice having regard to your situation. We recommend you obtain financial, legal and taxation advice before making any financial investment decision.

This research is based on information obtained from sources believed to be reliable and ASPL and ASAL have made every effort to ensure the information in this report is accurate, but we do not make any representation or warranty that it is accurate, reliable, complete or up to date. The Argonaut Group accepts no obligation to correct or update the information or the opinions in it. Opinions expressed are subject to change without notice and accurately reflect the analyst(s)' personal views at the time of writing. No member of the Argonaut Group or its respective employees, agents or consultants accepts any liability whatsoever for any direct, indirect, consequential or other loss arising from any use of this research and/or further communication in relation to this research.

Nothing in this research shall be construed as a solicitation to buy or sell any financial product, or to engage in or refrain from engaging in any transaction. The Argonaut Group and/or its associates, including ASPL, ASAL, officers or employees may have interests in the financial products or a relationship with the issuer of the financial products referred to in this report by acting in various roles including as investment banker, underwriter or dealer, holder of principal positions, broker, director or adviser. Further, they may buy or sell those securities as principal or agent, and as such may effect transactions which are not consistent with the recommendations (if any) in this research. The Argonaut Group and/or its associates, including ASPL and ASAL, may receive fees, brokerage or commissions for acting in those capacities and the reader should assume that this is the case.

There are risks involved in securities trading. The price of securities can and does fluctuate, and an individual security may even become valueless. International investors are reminded of the additional risks inherent in international investments, such as currency fluctuations and international stock market or economic conditions, which may adversely affect the value of the investment.

The analyst(s) principally responsible for the preparation of this research may receive compensation based on ASPL's and / or ASAL's overall revenues.

**Copyright**

© 2020. All rights reserved. No part of this document may be reproduced or distributed in any manner without the written permission of Argonaut Securities Pty Limited and / or Argonaut Securities (Asia) Limited. Argonaut Securities Pty Limited and Argonaut Securities (Asia) Limited specifically prohibits the re-distribution of this document, via the internet or otherwise, and accepts no liability whatsoever for the actions of third parties in this respect.