

29Metals

A long-awaited copper alternative with plenty to like

Non Ferrous Metals | Initiation

29M.AX

Target price (12M, A\$)

2.65

Outperform^[V]

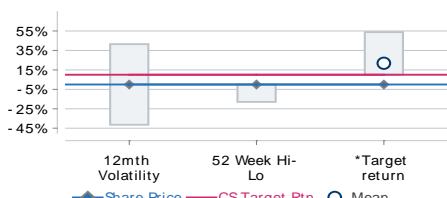
- **Initiate with an OUTPERFORM rating and A\$2.65/sh target price.** We view 29Metals as a favourable copper alternative to ASX-listed peer OZ Minerals in terms of value, growth potential and risk profile. 29M operates two underground mines primarily producing copper but with significant gold and zinc by-product credits. Both assets have mine life to 2030+ with aspiration to grow production 50% over the next seven years. There is also substantial exploration opportunity across the portfolio both in- and near-mine.
- **A turnaround story led by an experienced management team.** Chaired by Owen Hegarty, a mining executive with 40+ years' experience including as former MD of Oxiana. CEO Peter Albert is also ex-Oxiana and leads a senior management team with extensive experience across numerous Australian and global operations. 29Metals' genesis is Owen Hegarty's resources specialist PE fund, EMR Capital. EMR acquired assets that appeared starved of capital and provided the necessary investment to extend mine life and improve productivity. Upside remains from opening a third mining front and plant debottlenecking which could see a 25% lift to throughput at Golden Grove, 29M's primary asset.
- **Promising exploration potential across the portfolio.** Golden Grove has multiple targets not currently included in the mine plan which cumulatively represent 10+ years of mine life in Resources on an expanded 2.0mtpa throughput. Beyond this, development of Gossan Valley would enable drilling beyond the current 400m level which could reveal further targets. Capricorn Copper (CC) has almost 1,900 km² of largely unexplored tenements featuring seven drill ready targets within 45km of the mine. Exploration at CC has been limited with the PE fund structure limiting the capital available to the operation.
- **Valuation.** Our A\$2.65 valuation is set at a 50/50 blend of our sum-of-the-parts DCF (A\$2.70) and 6.0x CY22F EV/EBITDA (A\$2.56). Our 6.0x multiple is in line with global copper peers with 29M's growth prospects and favourable jurisdiction compensating for its smaller-than-average size, in our view. Our spot valuation is A\$4.45/sh.
- **Key risks include:** 1) Commodity price decline, 2) Operating performance noting both mines are relatively old. 3) Geotechnical risk with GG now mining at a 1.4km depth.

Financial and valuation metrics

Year	12/20A	12/21E	12/22E	12/23E
Revenue (A\$ mn)	625	665	698	686
EBITDA (A\$ mn)	176	206	212	191
EBIT (A\$ mn)	44	79	88	59
Net Income (Adj.) (A\$ mn)	33	37	57	41
EPS (Adj.) (Ac)	6.91	7.67	11.89	8.52
Change from previous EPS (%)	n.a.			
EPS growth (%)		11.0	55.0	(28.4)
Consensus EPS (A\$)	-	29.31	57.01	80.39
P/E (x)	35.5	31.9	20.6	28.8
Dividends (Ac)	0.00	0.00	7.81	2.83
Dividend yield (%)	0.0	0.0	3.2	1.2
Price/Book (x)	1.6	1.4	1.4	1.3
Net debt/EBITDA (x)	0.6	(0.1)	(0.3)	(0.3)

Source: Company data, Refinitiv, Credit Suisse estimates

Total return forecast in perspective



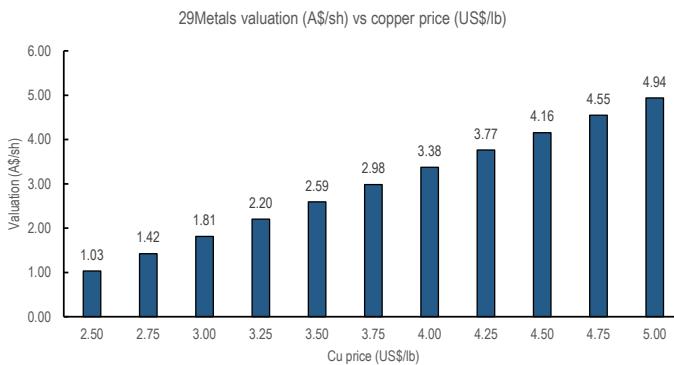
Source: Company data, Refinitiv, Credit Suisse estimates

Performance	1M	3M	12M
Absolute (%)	20.10		
Relative (%)	17.53		

DISCLOSURE APPENDIX AT THE BACK OF THIS REPORT CONTAINS IMPORTANT DISCLOSURES, ANALYST CERTIFICATIONS, LEGAL ENTITY DISCLOSURE AND THE STATUS OF NON-US ANALYSTS. US Disclosure: Credit Suisse does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the Firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

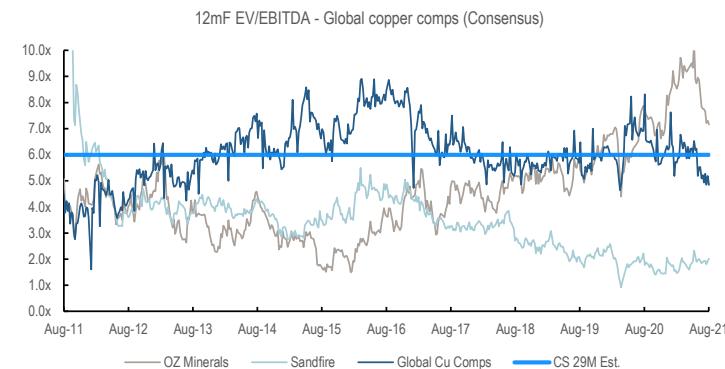
Focus charts

Figure 1: Valuation (DCF & EV/EBITDA) – copper sensitivity



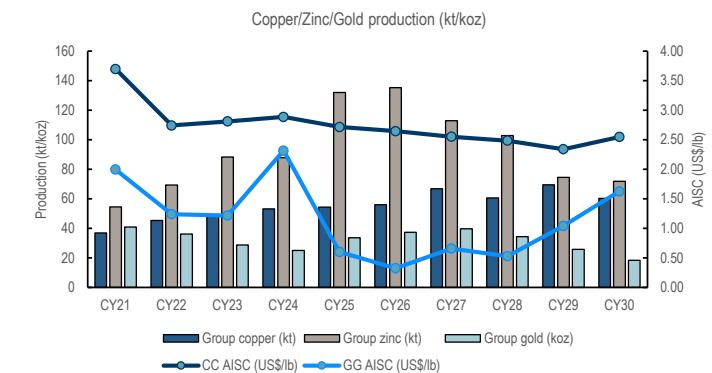
Source: Credit Suisse estimates

Figure 3: Copper comps – EV/EBITDA (Consensus)



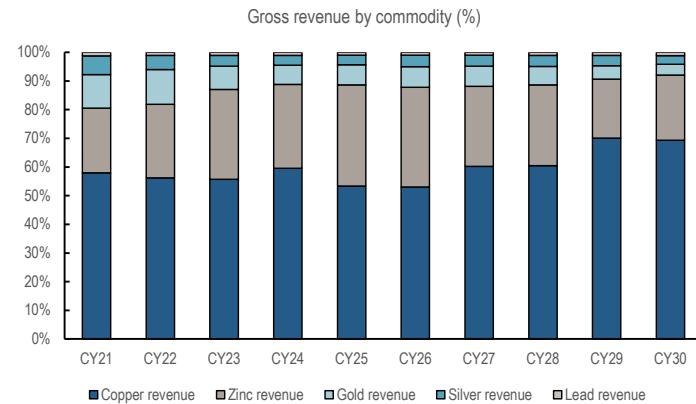
Source: the BLOOMBERG PROFESSIONAL™ service

Figure 5: Group production and costs



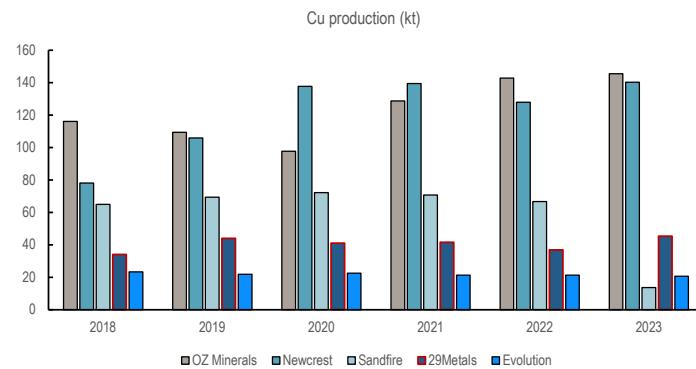
Source: Credit Suisse estimates

Figure 2: Revenue composition by commodity (CSe)



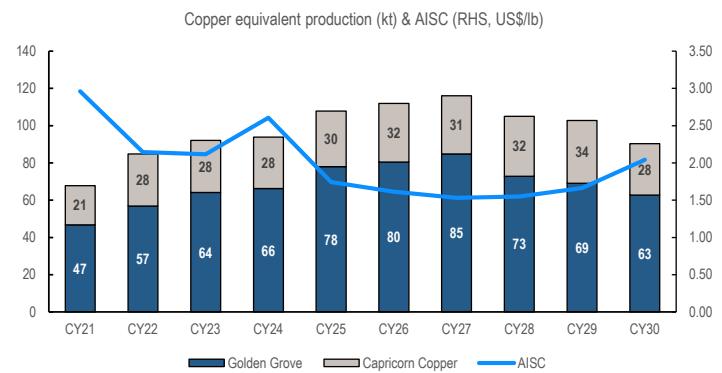
Source: Credit Suisse estimates

Figure 4: 29Metals vs ASX copper producers (VA consensus)



Source: Company data (29Metals), Visible Alpha (ASX companies)

Figure 6: Group Cu-eq production and cost



Source: Credit Suisse estimates

Executive Summary

A long-awaited copper alternative with plenty to like

29Metals is a copper-focused mining company with two underground operations in Australia. It offers investors exposure to copper and zinc and gold by-products at a time when the decarbonisation trend is driving demand. Investors on the ASX have limited options for exposure to copper. Its peers are SFR and OZL which respectively have lower and higher multiples than 29M based on Australian mine life and assets quality.

Its primary asset is Golden Grove (WA), which produces copper, zinc, gold, silver and lead. The strong by-product credits support the mine's position in the bottom quartile of the Wood Mackenzie cost curve. Capricorn Copper (QLD) produces copper (and a small amount of silver) and is structurally higher cost, placing it in the top decile of the cost curve.

Both Golden Grove and Capricorn Copper are turnaround stories. PE group EMR Capital acquired both assets and focused on growing resources, extending mine life, improving operations and restarting mining at Capricorn. Both assets now have 10+ year mine lives, with high probability of reserve conversions/extensions to at least 15 years of production. The turnaround at both operations is not yet complete.

At Golden Grove (GG), 29M intends to lift the mining rate through installation of a paste fill plant later this year. This should allow a quicker by turn-around of mining faces by faster back-filling and stabilisation of exhausted stopes. 29M also has aspirations of opening a third mine, which would enable a 25% increase in mining rates, depending on the outcome of a pending feasibility study. A corresponding increase in the GG plant capacity to match the higher mining rate has been partially achieved by the installation of sequential flotation, and the remaining uplift in plant throughput can be achieved through back-end debottlenecking at modest additional capex.

At Capricorn Copper, 29M expanded resources, restarted the mill and began mining in three orebodies accessed by two declines. Of particular note, 29M has installed low-cost sub-level caving at a new orebody, which is expected to greatly increase productivity as the orebody expands in width at depth, with greater tonnes per vertical metre.

Exploration will be key to adding value. At Golden Grove, we believe there are multiple near- and in-mine opportunities to extend the mine life well beyond 10 years through converting and extending resources not currently captured in the mine plan. If the third mine, Gossan Valley, is developed then the ability to drill at depth below the 400m level would be enhanced. The previous two mines at Golden Grove have resources extending down to at least two kilometers depth, so there is a possibility that with deeper drilling, Gossan Valley may also prove to have much larger resources than are currently known. At Capricorn Copper, there are extensive tenement holdings spanning almost 1,900 km² which include seven drill-ready targets within 45km of the current operation. The area has previously been underexplored, with the previous miners as well as EMR tightly focused on the immediate operations. Having an operating mill unlocks even moderate resource discoveries.

Led by an experienced management team. Owen Hegarty (Chair) and Peter Albert (CEO) are both ex-Oxiana (OZL precursor) and have a combined 75+ years' experience in mining. They lead a knowledgeable team which has experience spanning numerous Australian and global operations. We view the team as capable of delivering on 29Metals' stated growth aspiration of over 50% production growth by 2026.

Attractively priced... Our DCF suggests there is upside to 29Metals' current valuation, noting we apply a US\$3.50/lb LT copper assumption compared to spot US\$4.32/lb. On a multiple basis, 29Metals is currently trading at 5.8x CY22F EBITDA vs global peers 5-7x. There is upside to 29Metals multiple considering: 1) both operations are in a tier-1 jurisdiction; and 2) the group has significant opportunity for near-term organic growth. On a spot basis, the CY22 multiple is 3.4x.

... But not without risk. 29Metals faces typical risks associated with mining including commodity price and operational risks. The mining sector as a whole is also currently facing material cost pressure, particularly as a result of labour shortages. In our view, 29Metals' most significant company-specific risk is the age of its operations. Despite refurbishment of the Capricorn Copper plant, a gearbox failure in the March quarter caused a 10-day mill outage. The deep operations at Golden Grove require careful management of geotechnical stress and seismicity.

Our overall view is positive. 29Metals has a clear path to grow production, increase earnings and create value. It also has a management team which we view as capable of delivering on these aspirations. We view 29Metals as attractively priced at a time when copper investments are in high demand among a global decarbonisation theme. We acknowledge the risks but seem them as fairly compensated given the upside to our value on: 1) copper price; and 2) exploration potential beyond our modelling.

29Metals (29M.AX / 29M AU)

Price (04 Aug 2021): A\$2.45

Target Price: A\$2.65

Analyst: Patrick Collier

Rating: Outperform

Income Statement	12/20A	12/21E	12/22E	12/23E
Revenue	625	665	698	686
EBITDA	176	206	212	191
Depr. & Amort.	(132)	(126)	(124)	(133)
EBIT	44	79	88	59
Associates	-	-	-	-
Net interest exp.	(21)	(12)	(13)	(11)
Other	23	(18)	5	9
Profit before tax	46	50	79	57
Income tax	(13)	(13)	(22)	(16)
Profit after tax	33	37	57	41
Minorities	-	-	-	-
Preferred dividends	-	-	-	-
Associates & Other	0	0	0	0
Normalised NPAT	33	37	57	41
Unusual item after tax	0	0	0	0
Net profit (Reported)	33	37	57	41
Cash Flow	12/20A	12/21E	12/22E	12/23E
EBIT	44	79	88	59
Net Interest	(13)	(12)	(13)	(11)
Depr & Amort	132	126	124	133
Tax Paid	0	(4)	(26)	(18)
Change in Working capital	4	(63)	14	(1)
Other cash and non-cash items	(27)	3	(11)	7
Operating cashflow	140	130	175	167
Capex	(96)	(100)	(86)	(136)
Capex - expansionary	(11)	(12)	(13)	(66)
Capex - Maintenance	(85)	(88)	(73)	(70)
Acquisitions & Invest	(12)	(10)	(10)	(10)
Asset sale proceeds	-	-	-	-
Other	-	-	-	-
Investing cashflow	(107)	(111)	(96)	(146)
Dividends paid	0	0	(38)	(14)
Equity raised	(176)	91	0	0
Net borrowings	144	(26)	(20)	(20)
Other financing cash in/(outflows)	(23)	(32)	(10)	(3)
Financing cashflow	(55)	34	(67)	(37)
Total cashflow	(23)	53	12	(15)
Adjustments	0	0	0	0
Movement in cash/equivalents	(23)	53	12	(15)
Balance Sheet	12/20A	12/21E	12/22E	12/23E
Cash & equivalents	150	203	215	200
Inventories	41	46	38	39
Receivables	33	47	42	43
Other current assets	7	7	7	7
Current assets	232	304	303	289
Property, plant & equip.	901	885	857	865
Intangibles	0	0	0	0
Other non-current assets	124	124	124	124
Non-current assets	1,024	1,008	980	989
Total assets	1,257	1,312	1,283	1,278
Payables	78	34	35	35
Interest bearing debt	248	190	160	137
Other liabilities	213	243	222	213
Total liabilities	539	467	418	386
Net assets	717	846	865	893
Ordinary equity	717	846	865	893
Minority interests	-	-	-	-
Preferred capital	-	-	-	-
Total shareholder funds	717	846	865	893
Net Debt	97	(13)	(55)	(63)
Earnings	12/20A	12/21E	12/22E	12/23E
Equiv. FPO (period avg) (mn)	480	480	480	480
EPS (CS adj.) (A\$)	0.1	0.1	0.1	0.1
EPS growth (%)	-	11.0	55.0	(28.4)
DPS (A\$)	0.0	0.0	0.1	0.0
Dividend Payout (%)	0.0	0.0	65.7	33.3
Free CFPS (A\$)	0.1	0.1	0.2	0.2

Source: Company data, Refinitiv, Credit Suisse estimates

Company Background

29Metals is a copper focussed base and precious metals mining company with underground operations in Western Australia and Queensland. It mines copper, zinc, gold, silver and lead. It also holds exploration tenements in Chile.

Blue/Grey Sky Scenario



Our Blue Sky Scenario (A\$)

4.05

Our A\$4.05/sh Blue Sky valuation is derived from a scenario applying a 10% increase to commodity prices from 2022. We also apply a 5-year life extension at Golden Grove (to 2040) and a 2-year life extension at Capricorn Copper (to 2036). We apply a 7.0x multiple to CY22F EBITDA instead of 6.0x.

Our Grey Sky Scenario (A\$)

1.40

Our A\$1.40/sh Grey Sky valuation is derived from a scenario applying a 10% decrease to commodity prices from 2022. We also assume Gossay Valley is not developed and that Golden Grove remains a 1.6mtpa operation. At Capricorn Copper, we apply a 10% reduction to throughput. We apply a 5.0x multiple to CY22F EBITDA instead of 6.0x.

Share price performance



On 04-Aug-2021 the S&P ASX 200 Index closed at 7503.2

On 04-Aug-2021 the spot exchange rate was A\$1.35/US\$1

Table of Contents

Focus charts	2
<hr/>	
Executive Summary	3
Valuation	7
Blue Sky (upside) and Grey Sky (downside) valuations.....	9
Earnings and Valuation sensitivities	10
HOLT® Valuation	12
Global comps.....	14
Company overview	14
Reserves & Resources summary and contained value	15
<hr/>	
Golden Grove – Asset review	18
History	18
Reserves and Resources	19
Operating overview.....	22
Optimisation opportunities.....	23
Mine life profile and projections	24
Exploration	27
Valuation	28
Golden Grove principal risk factors	29
Site photos	30
<hr/>	
Capricorn – Asset review	34
History	34
Reserves and Resources	35
Operating overview.....	36
Mine life profile and projections	39
Exploration	42
Valuation	44
<hr/>	
Redhill – Asset review	46
Overview	46
Exploration	46
Valuation	47
<hr/>	
Financials	48
Profit and Loss	48
Cash flow	50
Balance sheet.....	52
Capital management	53
<hr/>	
Key Risks	54
<hr/>	
Board and management	56
Board and management composition/experience	56
Remuneration structure	59
<hr/>	
Environmental, Social and Governance	60
Environmental.....	60
Social.....	62
Governance	63
<hr/>	
Copper sector analysis and price forecast	64
Supply wave looms, but real deficit on the horizon	65

Valuation

Base case valuation

- **Target price \$2.65/sh.**
- **We determine our Target Price from a 50/50 blend of our sum-of-the-parts DCF valuation and a 6.0x multiple applied to CY22F EBITDA.**
- We value Golden Grove at \$1,058mn (\$2.20/sh, 82% group NPV) and Capricorn Copper at \$398mn (\$0.83/sh, 31% group NPV). Our DCF utilises an 8% (real) WACC and applies CS house commodity forecasts. Key forecasts include copper: US\$4.18/lb 2021, \$3.40/lb 2022, \$3.20/lb in 2023 and a LT price of \$3.50/lb (real). Our full commodity price deck is shown in Figure 11.
- Our DCF is based on mine plans presented in the two Technical Reviews prepared by Behre Dolbear Australia (Produced April 2021, herein referred to as "*BDA Technical Review of Golden Grove*" and "*BDA Technical Review of Capricorn Copper*"), to which we apply some modifying assumptions (modest increase to cost and capex profile), and Credit Suisse commodity price forecasts.
- We derive our 6.0x multiple based on the historical 10 year average trading ranges of global copper company peers using 12mF pricing on Consensus (Bloomberg). For the past four years the global peer group has traded around this level (Figure 9). ASX-listed peers OZ Minerals and Sandfire Resources currently have multiples above and below this level. SFR has a 15-month mine life, hence its depressed level. OZL is a low-cost copper producer with 130ktpa production in a market with few pure copper alternatives for investors, hence its elevated multiple in a period of enthusiasm for copper.
- While there are risks to 29M achieving planned production, **we believe our methodology accounts for the risk in the valuation.** The multiple is based on CY22 when our commodity forecasts are below spot, but production is higher due to ramp-up as outlined in the GG and CC Technical Reviews. We expect the strongest earnings to be post-2025. In addition we have applied modest cost and capex escalation to the NPV and used CS commodity price forecasts which are lower than spot.
- A scenario of applying spot commodity/AUDUSD price forecasts generates a \$4.45 valuation, ~68% above our base case.

Figure 7: Valuation – base case

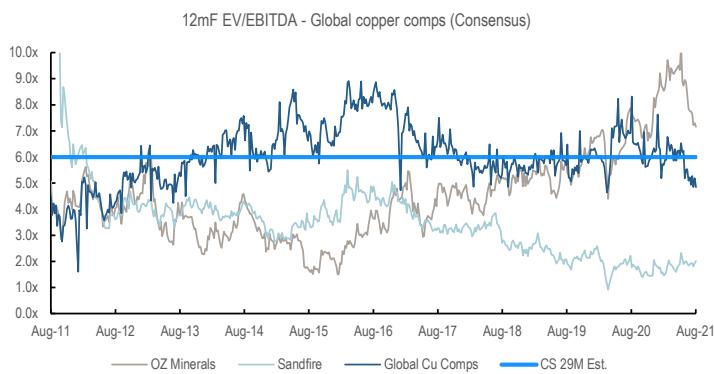
	NPV A\$mn	Ownership %	Risk Weighting %	Attributed NPV A\$mn	Attributed NPV A\$/sh
Operating Assets					
Golden Grove	1,058	100%	100%	1,058	2.20
Capricorn Copper	398	100%	100%	398	0.83
Total Operating Assets	1,456			1,456	3.03
Exploration					
Redhill	12	100%	100%	12	0.02
Total Exploration	12			12	0.02
Corporate/Other					
Corporate	(124)	100%	100%	(124)	(0.26)
Hedging	(8)	100%	100%	(8)	(0.02)
Net Debt inc. leases	(41)	100%	100%	(41)	(0.08)
Total Corporate/Other	(173)			(173)	(0.36)
NPV				1,295	2.70
EBITDA Multiple (6.0x CY22F EV/EBITDA)				1,228	2.56
Valuation	1,262			2.63	

Source: Credit Suisse estimates

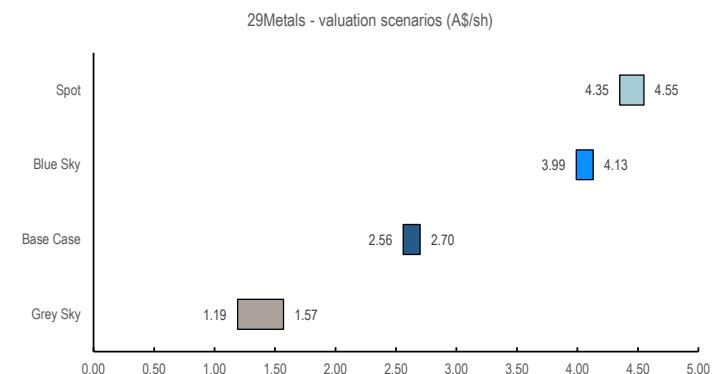
Figure 8: Valuation – spot Commodity/FX scenario

	NPV A\$mn	Ownership %	Risk Weighting %	Attributed NPV A\$mn	Attributed NPV A\$/sh
Operating Assets					
Golden Grove	1,636	100%	100%	1,636	3.41
Capricorn Copper	722	100%	100%	722	1.50
Total Operating Assets	2,358			2,358	4.91
Exploration					
Redhill	12	100%	100%	12	0.02
Total Exploration	12			12	0.02
Corporate/Other					
Corporate	(124)	100%	100%	(124)	(0.26)
Hedging	(19)	100%	100%	(19)	(0.04)
Net Debt inc. leases	(41)	100%	100%	(41)	(0.08)
Total Corporate/Other	(185)			(185)	(0.38)
NPV					2,186
EBITDA Multiple (6.0x CY22F EV/EBITDA)					2,090
Valuation	2,138			4.45	

Source: Credit Suisse estimates

Figure 9: Cu comps 12mF EV/EBITDA (Consensus)

Source: the BLOOMBERG PROFESSIONAL™ service

Figure 10: Valuation by scenario

Source: Credit Suisse estimates. Upper and lower numbers are NPV and EV/EBITDA components of valuation.

Credit Suisse valuation assumptions (base case):

- **Golden Grove.** We model mine life to 2035 and include mining of the Gossan Valley resource from 2025 for 2Mtpa throughput (a 400ktpa mine at Gossan Valley is under feasibility study but not yet approved). Average life of mine (LOM) production ~26ktpa Cu, 98ktpa Zn (including ~30/93ktpa Cu/Zn over 2021-2030); Mined inventory at ~2x Total Reserve and ~0.5x Total Resource.
- **Capricorn Copper.** Mine life to 2034 with average life of mine (LOM) production ~28ktpa Cu. Mined inventory at ~1.85x Reserve, ~0.4x Total Resource.
- **CS life of mine revenue equates to 139% of our Total Recoverable Reserve Value and 37% of our Total Recoverable Resource value.** Realisation of resources remains subject to a range of factors including mine performance, life, costs, production and prevailing metal prices. The quality of the GG resource, exploration upside and what we view as a high caliber management team are critical factors supporting our estimates.
- **DCF.** We apply a nominal 10.2% WACC for the first five years of our DCF followed by an 8% real WACC in perpetuity.
- Commodity price / AUDUSD forecasts. See Figure 11 below for summary.

Figure 11: Credit Suisse commodity price forecasts and spot

	2020	MarQ21	JunQ21	SepQ21	DecQ21	2021	MarQ22	JunQ22	SepQ22	DecQ22	2022	2023	LT	Spot	
Copper	US\$/lb	2.80	3.86	4.40	4.45	4.00	4.18	3.50	3.50	3.30	3.30	3.40	3.20	3.50	4.32
Zinc	US\$/lb	1.03	1.25	1.32	1.23	1.20	1.25	1.18	1.18	1.18	1.18	1.18	1.18	1.09	1.34
Lead	US\$/lb	0.83	0.91	0.97	0.89	0.89	0.91	0.92	0.92	0.92	0.92	0.92	0.94	0.91	1.11
Gold	US\$/oz	1,770	1,796	1,814	1,950	2,000	1,890	2,100	2,100	2,100	2,100	2,100	1,800	1,400	1,810
Silver	US\$/oz	20.5	26.2	26.7	25.0	24.0	25.7	18.0	18.0	18.0	18.0	18.0	18.0	16.5	25.6
AUDUSD	x	0.690	0.772	0.770	0.760	0.760	0.765	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.740

Source: Refinitiv (historic data and spot prices), Credit Suisse estimates (forecasts)

Blue Sky (upside) and Grey Sky (downside) valuations

Blue Sky (upside) scenario \$4.05/sh

We believe our Blue Sky valuation of A\$4.05/sh represents a plausible, not extreme, upside scenario. Key assumptions include:

- **Commodity prices.** 10% increase to our base case from 2022 onwards (Figure 12).
- **FX.** No change to long term AUDUSD 0.75.
- **Production.**
 - Golden Grove. 5 year mine life extension from our base case to 2040.
 - Capricorn. 2 year mine life extension from our base case to 2036.
- **Multiple re-rate.** 7.0x EV/EBITDA. A multiple re-rate above our base case 6.0x noting sector peers trade at ~5-10x (Figure 24).

Figure 12: Blue Sky commodity/FX assumptions

		2020	2021	2022	LT	Spot
Copper	US\$/lb	2.80	4.18	3.91	4.03	4.32
Zinc	US\$/lb	1.03	1.25	1.33	1.25	1.34
Lead	US\$/lb	0.83	0.91	1.01	1.04	1.11
Gold	US\$/oz	1,770	1,890	2,415	1,610	1,810
Silver	US\$/oz	20.5	25.7	23.0	19.0	25.6
AUDUSD	x	0.690	0.765	0.750	0.750	0.740

Source: Refinitiv (historic data, spot), Credit Suisse estimates (Blue Sky forecasts)

Grey Sky (downside) scenario \$1.40/sh

- Our grey sky valuation of A\$1.40/sh represents a scenario when the commodity prices fade, investors apply a multiple de-rate to global mining sector, and prospective production increases are not realised. Key assumptions include:
- **Commodity prices.** 10% decrease to our base case from 2022 onwards.
- **FX.** No change to long term AUDUSD 0.75.
- **Production.**
 - Golden Grove. Gossan Valley excluded with mining rate maintained at 1.6Mtpa average to 2035.
 - Capricorn. 10% reduction to mill throughput from 2022.
- **Multiple de-rate.** Priced at 5.0x EV/EBITDA with the de-rate reflective of more variable operating performance (i.e. an escalation in perceived risk profile), reduced earnings, margin and cash generation, and less favourable market view on the Cu/Zn price outlook.

Figure 13: Grey Sky commodity/FX assumptions

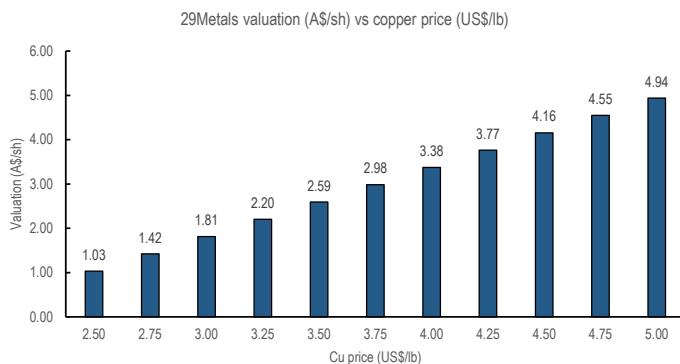
		2020	2021	2022	LT	Spot
Copper	US\$/lb	2.80	4.18	3.06	3.15	4.32
Zinc	US\$/lb	1.03	1.25	1.04	0.98	1.34
Lead	US\$/lb	0.83	0.91	0.79	0.82	1.11
Gold	US\$/oz	1,770	1,890	1,890	1,260	1,810
Silver	US\$/oz	20.5	25.7	18.0	14.9	25.6
AUDUSD	x	0.690	0.761	0.750	0.750	0.773

Source: Refinitiv (historic data), Credit Suisse estimates (Grey Sky forecasts)

Earnings and Valuation sensitivities

- We have conducted a range of earnings and valuation scenarios to demonstrate leverage in both these respects to copper and zinc prices (Figures 14 and 15).
- We base our earnings sensitivity on CY22F which is the earnings period on which we generate our EV/EBITDA multiple based valuation alongside our NPV.

Figure 14: Valuation (DCF, 6.0x EV/EBITDA) sensitivity to Cu at AUD 0.75



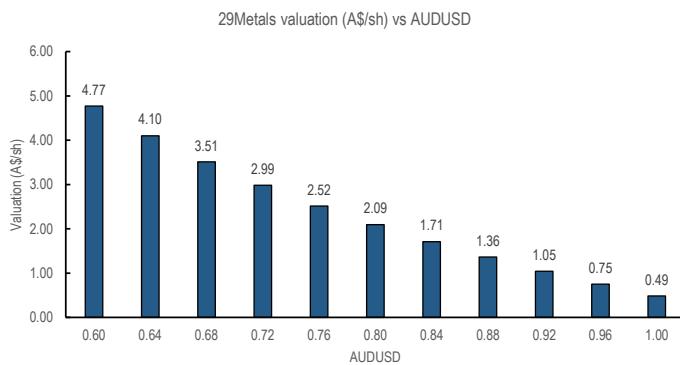
Source: Credit Suisse estimates

Figure 15: Valuation (DCF, 6.0x EV/EBITDA) sensitivity to Zn at AUD 0.75



Source: Credit Suisse estimates

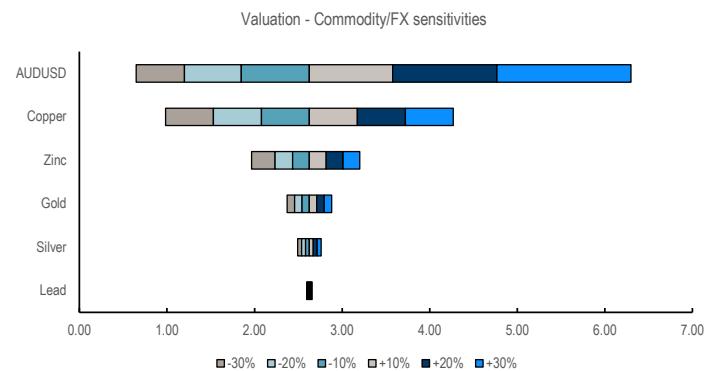
Figure 16: Valuation (DCF, 6.0x EV/EBITDA) sensitivity to AUDUSD



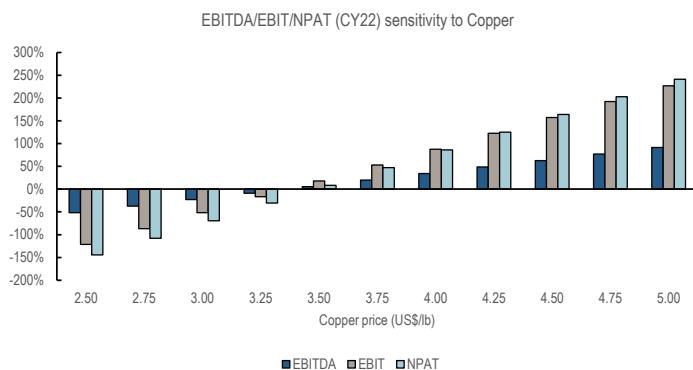
Source: Credit Suisse estimates.

- While 29M is leveraged to the copper price, these figures illustrate its extreme sensitivity to AUD/USD. The reason is that the cost base is denominated in AUD, but the FX affects the relative AUD price of all of the metal products together, as they are all priced in USD.

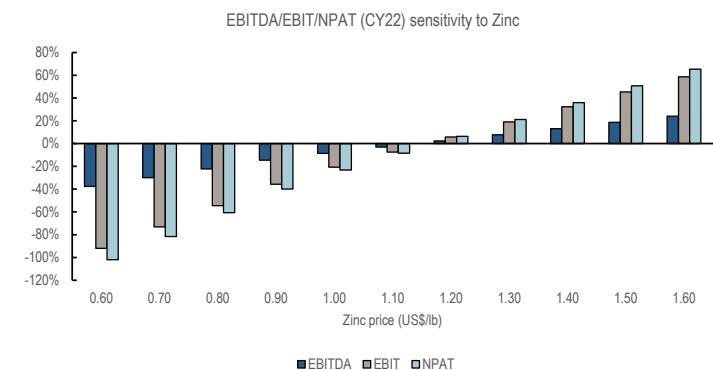
Figure 17: Valuation commodity/FX sensitivity (A\$/sh)



Source: Credit Suisse estimates. n.b. AUDUSD is in reverse order.

Figure 18: EBITDA/EBIT/NPAT (CY22) sensitivities - Copper

Source: Credit Suisse estimates

Figure 19: EBITDA/EBIT/NPAT (CY22) sensitivities - Zinc

Source: Credit Suisse estimates

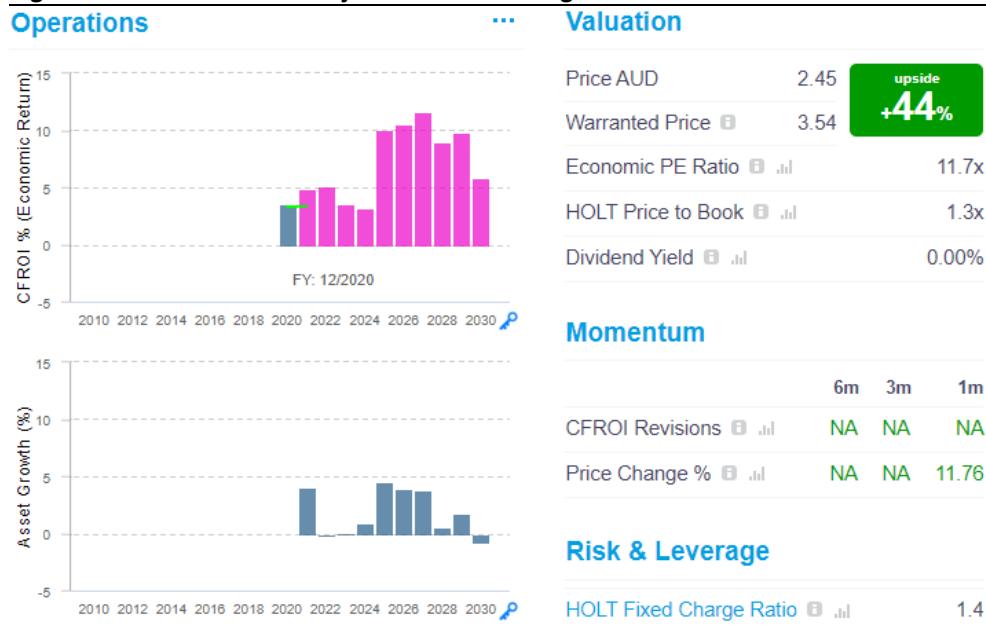
HOLT® Valuation

The HOLT methodology uses a proprietary performance measure known as Cash Flow Return on Investment (CFROI®). This is an approximation of the economic return, or an estimate of the average real internal rate of return, earned by a firm on the portfolio of projects that constitute its operating assets. A firm's CFROI can be directly compared against its real cost of capital (the investors' real discount rate) to see if the firm is creating economic wealth. By removing accounting and inflations distortions, CFROI allows for global comparability across sectors, regions and time; a more comprehensive metric than a traditional ROIC and ROE.

HOLT View on 29Metals Ltd

Applying key CS analyst estimates through the HOLT framework currently generates a **A\$3.54** per share valuation ([scenario](#)). This valuation initially uses ten years of key analyst estimates to drive CFROI forecasts before proprietary algorithms then determine the "rate of fade" towards the long-run average CFROI.

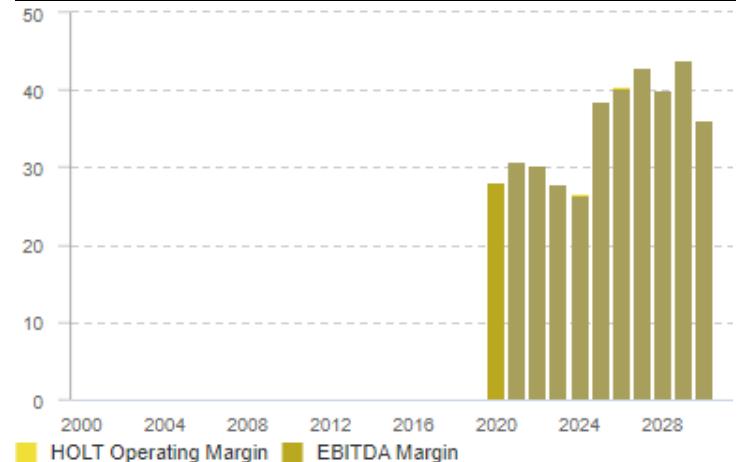
Figure 20: Credit Suisse Analyst Estimates through HOLT



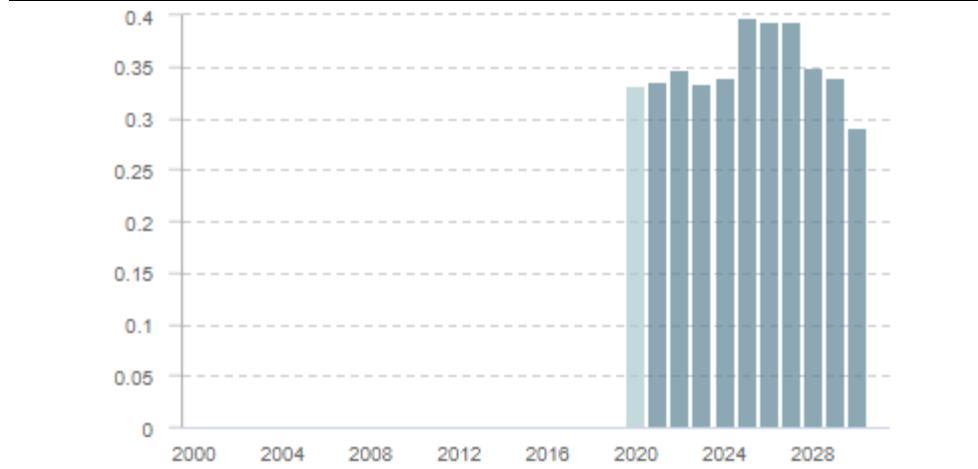
Source: Company data, Credit Suisse HOLT®, Credit Suisse estimates

Figure 21: Sales Growth (%)

Source: Company data, Credit Suisse HOLT®, Credit Suisse estimates

Figure 22: Margins (%)

Source: Company data, Credit Suisse HOLT®, Credit Suisse estimates

Figure 23: HOLT Asset Turns (x)

Source: Company data, Credit Suisse HOLT®, Credit Suisse estimates

Global comps

Figure 24: Global Copper / Zinc comps (IBES, USD)

Consensus Est. (IBES, USD) Company	Mkt Cap (US\$mn) Ticker	PE (x)			EV/EBITDA (x)			FCF Yield (%)			Net Debt / EBITDA ('21)	EBITDA Margin 2023	EPS CAGR FY21-23	
		2021	2022	2023	2021	2022	2023	2021	2022	2023				
Copper Producers (> 50% Revenue Copper)														
Freeport-McMoRan	FCX.N	53,697	12.5x	9.9x	12.7x	5.6x	4.6x	4.8x	10%	12%	0.1x	52%	(1)%	
Southern Copper Corporation	SCCO.N	50,598	14.5x	16.5x	19.8x	8.1x	9.0x	9.6x	-	-	0.5x	55%	(15)%	
Antofagasta	ANTO.L	20,975	14.7x	18.5x	20.6x	4.6x	5.2x	5.5x	7%	10%	0.1x	59%	(16)%	
First Quantum Minerals Ltd.	FM.T.O	14,489	15.5x	8.3x	8.9x	6.0x	4.8x	5.1x	10%	17%	1.6x	57%	32%	
KGHM Polska	KGH.WA	10,237	7.2x	8.5x	8.5x	4.4x	4.8x	5.1x	1%	4%	0.4x	29%	(8)%	
Lundin Mining Corp.	LUN.TO	6,538	8.6x	8.4x	9.7x	3.8x	3.7x	4.1x	9%	11%	10%	(0.2)x	54%	(6)%
OZ Minerals	OZL.AX	5,598	14.9x	13.4x	13.7x	7.5x	7.2x	7.2x	2%	(2)%	(4)%	0.5x	56%	4%
MMG Limited	1208.HK	4,298	7.6x	7.3x	6.9x	4.3x	4.1x	4.1x	17%	38%	47%	2.1x	61%	6%
Turquoise Hill Resources Ltd.	TRQ.T.O	3,263	6.1x	13.0x	16.3x	5.7x	9.0x	8.3x	(17)%	(30)%	(14)%	3.1x	46%	(39)%
Hudbay Minerals Inc.	HBM.T.O	1,820	28.5x	7.7x	8.1x	4.4x	3.2x	3.1x	5%	15%	15%	1.2x	54%	88%
Capstone Mining	CS.T.O	1,771	7.3x	8.1x	8.5x	4.4x	4.6x	4.6x	13%	11%	(2)%	(0.5)x	53%	(8)%
Sandfire Resources Limited	SFRAX	930	6.5x	5.8x	-	2.1x	2.1x	-	26%	8%	(0)%	(1.1)x	31%	(71)%
Copper Mountain	CMMC.T.O	584	5.8x	8.2x	10.3x	3.4x	4.9x	5.4x	19%	(4)%	(6)%	0.5x	38%	(25)%
Taseko Mines	TKO.T.O	510	18.9x	16.8x	15.6x	4.9x	4.9x	5.3x	(3)%	10%	6%	1.6x	37%	10%
Aeris Resources	AIS.AX	379	6.1x	4.1x	7.0x	-	-	-	-	-	-	-	41%	(7)%
Average		11,712	11.6x	10.3x	11.9x	4.9x	5.2x	5.6x	11%	14%	15%	1.2x	48%	28%
Zinc Producers (> 50% Revenue Zinc)														
Hindustan Zinc Limited	HZNC.BO	18,289	16.9x	13.1x	13.0x	10.3x	7.9x	8.0x	6%	8%	8%	(1.4)x	55%	14%
Boliden	BOL.ST	10,911	10.3x	11.1x	13.2x	5.5x	5.6x	6.0x	6%	5%	6%	(0.1)x	24%	(11)%
New Century Resources	NCZ.AX	179	6.1x	4.0x	3.4x	3.7x	2.3x	2.1x	-	-	-	0.6x	32%	34%
Average		9,793	11.1x	9.4x	9.9x	6.5x	5.3x	5.4x	6%	7%	7%	0.6x	37%	24%
Indexes														
ASX200	#AXJO	1,960,391	19.1x	17.3x	17.9x	8.3x	8.1x	8.7x	11%	14%	20%	0.9x	26%	3%
ASX200 Resources	#AXJR	546,437	10.8x	9.7x	13.0x	4.8x	4.8x	6.0x	9%	11%	11%	0.1x	56%	(9)%

Source: I/B/E/S. Prices valid as at 4/8.

Company overview

- Previously owned by EMR, the 29Metals portfolio consists of two Australian based operating assets – Golden Grove and Capricorn Copper – plus the Redhill exploration asset in Chile.
 - Golden Grove mine, a polymetallic Cu-Zn-Au VHMS system in Western Australia, which started production in 1990.
 - Capricorn Copper mine, structurally-controlled copper deposits, north of Mt Isa region, Queensland, which saw modern mining commence in 1970 and has produced sporadically since then.
 - Redhill – remote exploration tenements in southern Chile that 29M regards as prospective for gold and VHMS.
- EMR acquired 95% of Capricorn Copper in 2015, when it had been in care and maintenance since 2013. It completed a BFS in 2016, recommenced mining operations in 2017, and has spent over \$200mn on the operation for near-mine exploration, mine and mill upgrades, according to 29Metals. In 2018 it acquired the remaining 5% of Capricorn Copper.
- EMR acquired Golden Grove in 2017 and has subsequently invested over \$230mn in the operation for near-mine exploration, mine and mill upgrades, according to 29Metals.
- Metal sales from both operations are in concentrate form, predominantly to commodities trading firm Trafigura (other offtake partners include Korea Zinc and Mt Isa Mines). Copper is typically payable at 96.5%, subject to a minimum deduction of 1 unit (2017-2020 average 94.7%). Zinc concentrate is typically payable at 85% less a minimum deduction of 8 units (2017-2020 average 83.9%).

- In total, EMR undertook > \$400mn capital investment across both operations, extending life, improving mill and mining operations. EMR appears to have followed a play book that has been used by Australian gold producers NST and EVN, in acquiring assets and investing in exploration and operations to unlock latent production and mine life opportunity, and achieve rapid pay-back on the investment. A summary of EMR's activity is in Figure 25 and Figure 26 below.
- Corporate strategy is to deliver against its operating plan and exploit the pipeline of organic growth opportunities in the portfolio. Aspiration is to increase production by 50% over seven years, while continuing to invest in exploration to grow Resource base beyond depletion, thereby extending mine life.

Figure 25: Golden Grove

Investments made		Performance Outcomes	
Golden Grove			
▪ Exploration drilling		▪ Ore Reserves growth of 246% and Mineral Resources growth of 224%	
▪ Various process plant upgrades to improve milling reliability, throughput and recovery		▪ Increased mine-life to more than 10 years currently	
▪ Mine infrastructure upgrades (including refrigeration, ventilation and decline development)		▪ Increase in mining rate from 900 ktpa in 2016 to 1.4 Mt in 2020 ¹⁰	
▪ Move to single mining contractor		▪ Reduction in unit mining costs from \$193/tonne of ore mined in 2017 to \$173/tonne of ore mined in 2020 ¹¹	
		▪ Completion of Gossan Valley pre-feasibility study	

Source: 29Metals

Figure 26: Capricorn Copper

Investments made		Performance Outcomes	
Capricorn Copper			
▪ Studies for the restart of mining operations and refurbishment of the plant and site infrastructure		▪ Recommenced mining operations	
▪ Drilling to improve orebody knowledge and extend Mineral Resource base		▪ Developed two new orebodies, creating three mining fronts, intended to enhance operational flexibility, including development and ramp-up of the Esperanza sublevel cave ('SLC')	
▪ Environmental processes and infrastructure improvements		▪ Established mine-life in excess of 10 years	
		▪ Staged increase in mining and milling rates, demonstrating annualised mining and milling rate of 2 Mtpa in 2020	

Source: 29Metals

Reserves & Resources summary and contained value

Figure 27: Group Reserves & Resources

	Tonnage Mt	Cu %	Zn %	Pb %	Au g/t	Ag g/t	Cu kt	Zn kt	Pb kt	Au koz	Ag koz
Reserves											
Golden Grove	14	1.7%	5.6%	0.4%	0.9	36	241	804	57	433	16,484
Capricorn Copper	13	1.8%	0.0%	0.0%	0.0	11	240	0	0	0	4,800
Total Operating	28	1.7%	2.9%	0.2%	0.5	24	481	804	57	433	21,284
Redhill	0	0.0%	0.0%	0.0%	0.0	0	0	0	0	0	0
Total Reserve	28	1.7%	2.9%	0.2%	0.5	24	481	804	57	433	21,284
Resources											
Golden Grove	58	1.6%	4.5%	0.3%	0.7	30	926	2,615	166	1,301	56,968
Capricorn Copper	63	1.8%	0.0%	0.0%	0.0	8	1,100	0	0	0	15,125
Total Operating	120	1.7%	2.2%	0.1%	0.3	18	2,026	2,615	166	1,301	71,093
Redhill	4	1.7%	0.0%	0.0%	0.3	33	71	0	0	40	4,611
Total Resource	125	1.7%	2.1%	0.1%	0.3	19	2,097	2,615	166	1,341	75,704

Source: Company data.

Totals may not add due to rounding.

We determine the Total Recoverable Contained Metal value across 29M's operating assets of Golden Grove and Capricorn Copper to be:

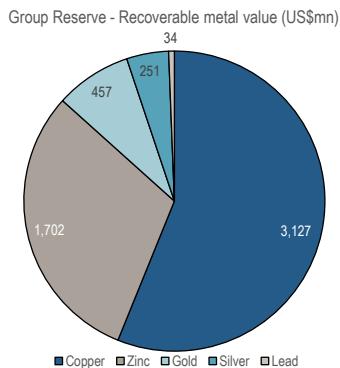
- Total Recoverable Reserve value US\$5,572mn (A\$7,429mn AUDUSD 0.75);
- Total Recoverable Resource value US\$21,006mn (A\$28,009mn AUDUSD 0.75);
- Total Recoverable Measured + Indicated Resource value US\$16,398mn (A\$21,865mn AUDUSD 0.75)

Recoverable value is based on Reserve and Resource contained, the assumed recoverability factor that 29M uses for copper equivalent calculations (29Metals) and Credit Suisse long-term metal price assumptions.

29Metals applies the following recovery assumptions in determining the copper equivalent calculations:

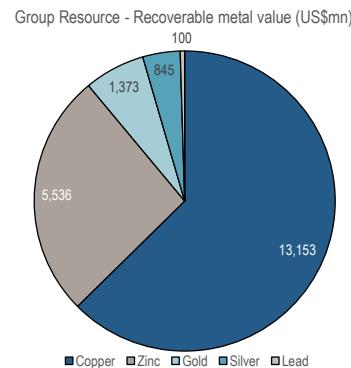
- **Golden Grove.** Copper recovery 85.6%; zinc recovery 88.1%; gold recovery 75.3%
- **Capricorn.** Copper recovery 82.9%; silver recovery 44.6%

Figure 28: Group Recoverable Reserve Value (US\$mn)



Source: Credit Suisse estimates for prices, 29Metals Reserves

Figure 29: Group Recoverable Resource Value (US\$mn)

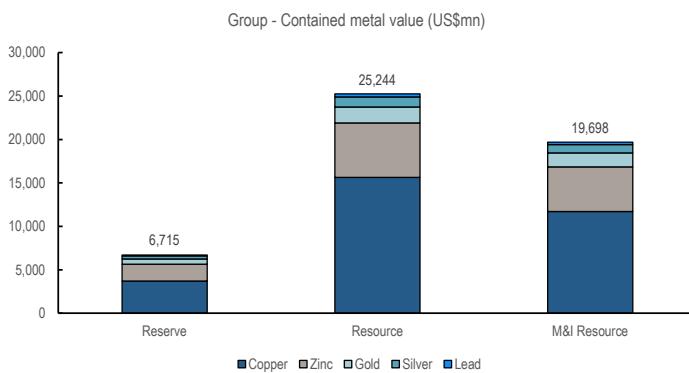


Source: Credit Suisse estimates for prices, 29Metals Resources

We determine the contained in-situ metal values (i.e. pre recovery) on the same basis (i.e. Credit Suisse LT metal prices which include US\$3.50/lb Cu and US\$1.09/lb Zn, US\$1,400/oz Au, US\$16.50/oz Ag, US\$0.91/lb Pb) as:

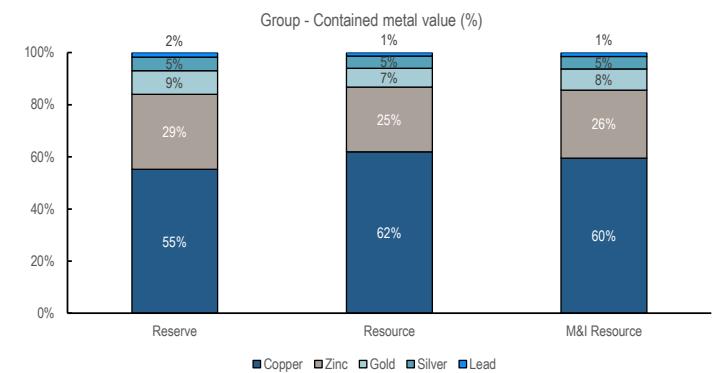
- **Total in-situ Reserve metal value US\$6,715mn.** Includes contained copper value US\$3,711mn; Zinc US\$1,932mn; Other US\$1,072mn (gold, silver, lead)
- **Total in-situ Resource metal value US\$25,244mn.** Includes contained copper value US\$15,633mn; Zinc US\$6,284mn; Gold US\$1,821mn ; Other US\$1,506mn (silver, lead)
- **Total Measured & Indicated Resource metal value US\$19,698mn.** Includes contained copper value US\$11,721mn; Zinc US\$5,135mn; Gold US\$1,607mn; Other US\$1,235mn (silver, lead).

Figure 30: In-situ metal value on CS LT metal price assumptions (US\$mn)



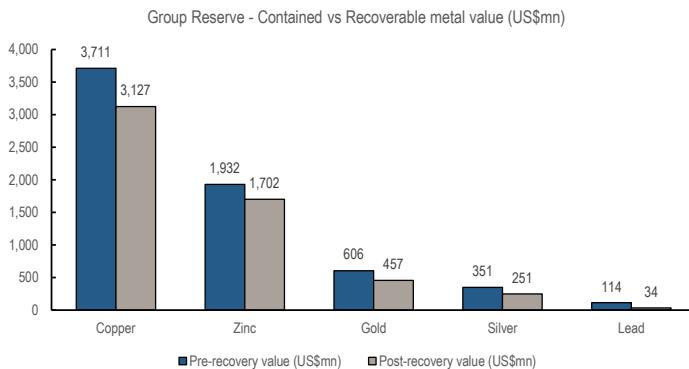
Source: Credit Suisse estimates for prices, 29Metals Reserves and Resources

Figure 31: In-situ metal value contribution on CS LT metal price assumptions (%)

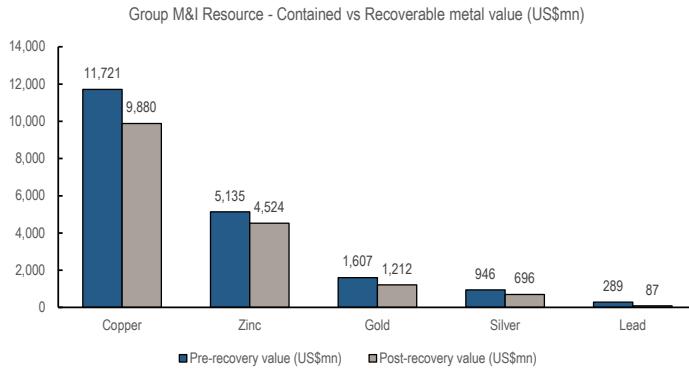


Source: Credit Suisse estimates for prices, 29Metals Reserves and Resources

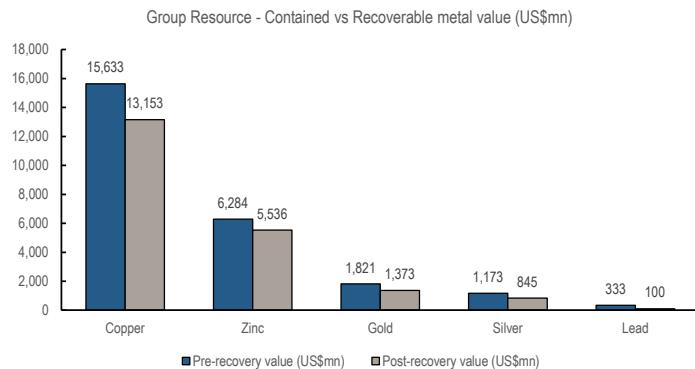
NB. Actual recovered metal value will be determined by mine performance (i.e. volume and grade reconciliation vs Reserve/Resource), metal recovery rates, and realised metal prices.

Figure 32: Total In-situ/Recoverable Reserve value (US\$mn)

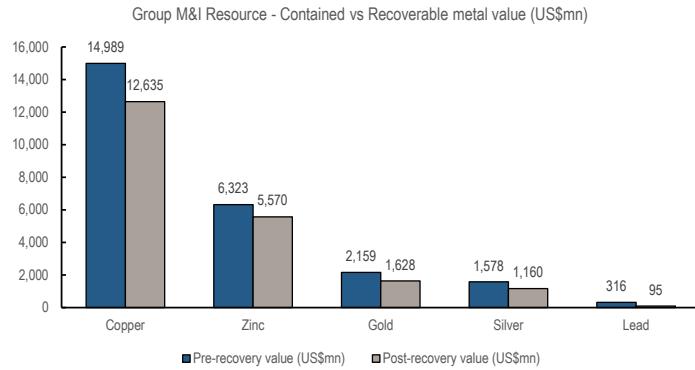
Source: Credit Suisse estimates for prices, 29Metals Reserves and Resources

Figure 34: Total In-situ/Recoverable Measured + Indicated Resource value (US\$mn)

Source: Credit Suisse estimates for prices, 29Metals Reserves and Resources

Figure 33: Total In-situ/Recoverable Resource value (US\$mn)

Source: Credit Suisse estimates for prices, 29Metals Reserves and Resources

Figure 35: Total In-situ/Recoverable Measured + Indicated Resource value on spot (US\$mn)

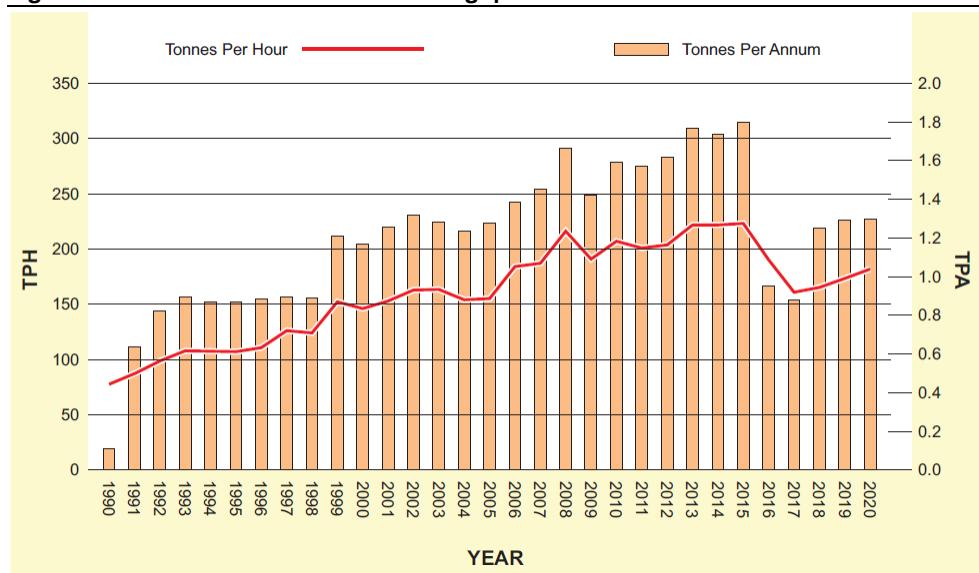
Source: Credit Suisse estimates for prices, 29Metals Reserves and Resources

Golden Grove – Asset review

History

- **Golden Grove (GG) is a long established mine** (~30 years) with competitive cost position vs copper peers. Its competitive cost positioning is due to its polymetallic nature (i.e. a producer of copper, zinc, lead, silver and gold) providing it multiple by-product credits to offset costs.
- **EMR acquired GG in March 2017 when production was declining on ore reserve exhaustion** (Figure 36). Since that time EMR has invested \$230Mn in resource drilling, and mine and mill improvements. EMR lifted the mining rate by accelerating development, is conducting a Feasibility Study on a third mining front and intends to establish a paste fill plant to assist backfilling mining voids to help raising mining rates further. It increased the milling rate with a secondary crusher and installed sequential flotation to improve copper recovery and avoid batch processing of different ore types.

Figure 36: Golden Grove historical throughput

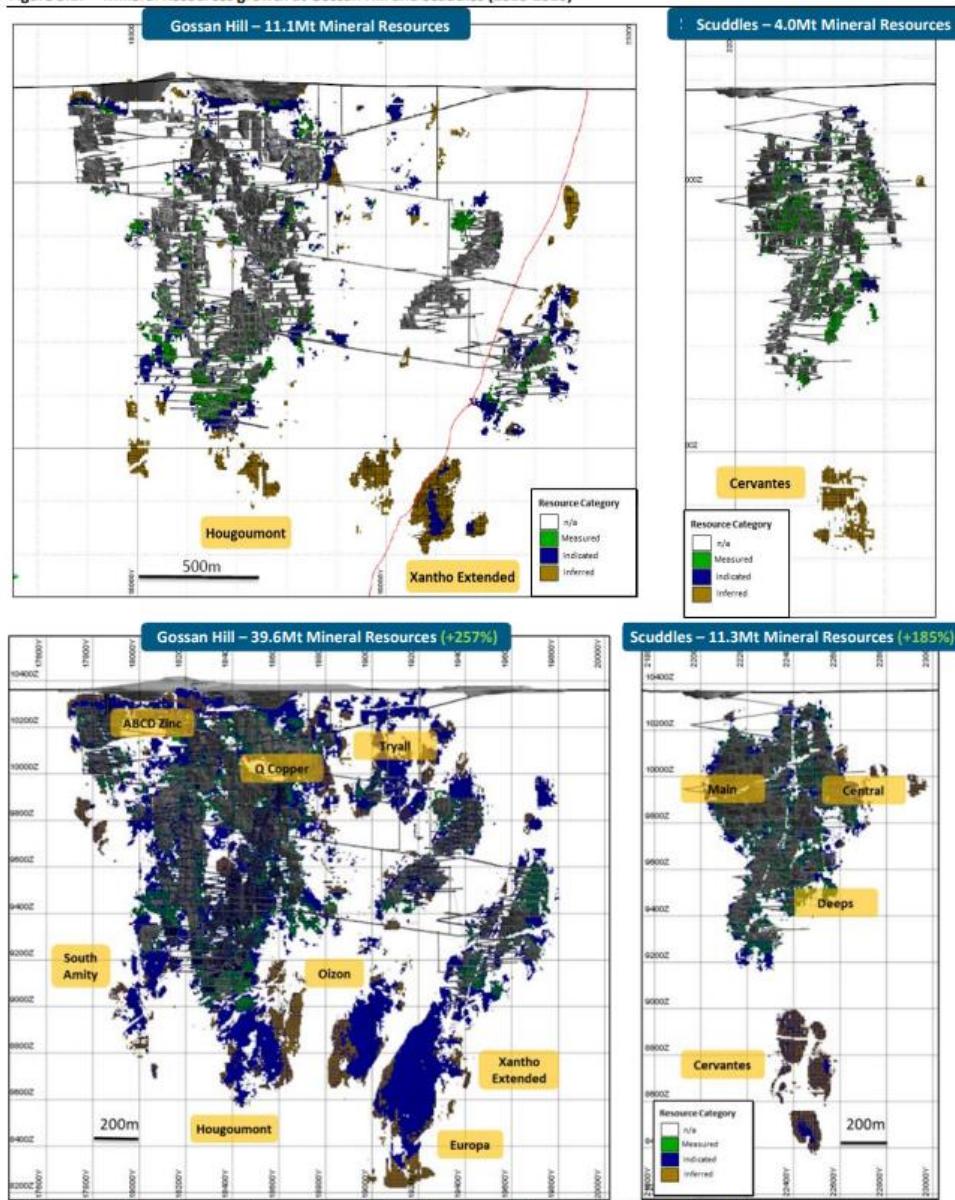


Source: BDA Technical Review of Golden Grove

- Despite its long track record of production, under prior owners GG appeared starved of capital, depleting its mining inventory and stymying milling efficiency. EMR's acquisition and subsequent investment has addressed many of these shortcomings.
- It has materially grown its resource base (Figure 37), and extended the mine life by partially unlocking what appears to be additional extensive orebodies, offering further upside from currently defined levels.
- We have witnessed similar 'turnarounds' of unloved assets before, notably the early days of gold companies NST and EVN which both acquired unloved, and underinvested assets, invested in exploration, achieved rapid payback on invested capital, and drove highly value-accretive production and mine life growth. GG appears to be following a similar play book, offering resource, life and production growth from current levels.

Figure 37: Mineral resources growth at Gossan Hill and Scuddles: 2016 vs 2020

Figure 3.17 – Mineral Resources growth at Gossan Hill and Scuddles (2016-2020)



Source: 29Metals

Reserves and Resources

- Our principal uncertainty relates to the extent to which we rely on resource estimation. Implicit in GG's mine life (base case and consolidated) is exploration success and ongoing Resource to Reserve conversion. By its nature, reliance on lower confidence Resource (i.e. non-Reserve) carries elevated risk compared to a mine plan based on Reserves.
- However, taking into consideration the long history of reserve discovery and additions at GG, the array of Resource extension and conversion options (the majority of which are open and not yet full defined), and GG's material increase to the Resource since EMR's

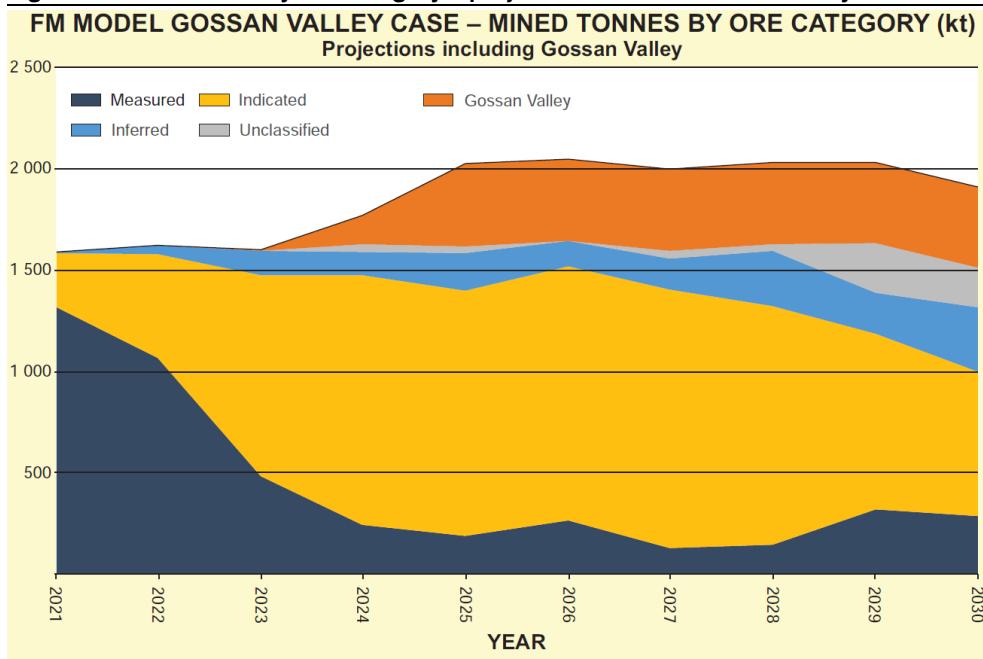
acquisition, we believe there is a reasonable prospect that resources will be converted to reserves, and further resources discovered.

- This should allow both mining rate and mill throughput rates to increase, for the benefit of mine production rates and unit cost of production.

Reserves

- **Total Reserves** (Figure 41) 14.3Mt at 1.7% Cu , 5.6% Zn, 0.4% Pb and 0.9g/t Au for 241kt contained copper and 804kt contained zinc. Reserve estimate is based on metal prices: US\$3.00/lb Cu, US\$1.10/lb Zn, US\$0.95/lb Pb, US\$,1400/oz Au, US\$21/oz Ag.
- **Implied mine life** based purely on Reserve is ~9 years at the planned 1.6Mtpa mining rate (ex-Gossan Valley). 29Metals highlights potential for production out to 2035, but the BDA report notes this requires extensions to existing resources at Scuddles and Gossan Hill which are yet to be demonstrated.
- **There is a further proposal under consideration** to lift the mining rate to 2.0Mtpa by adding mining operations at the Gossan Valley resources, but there is no current reserve for Gossan Valley. Per the BDA Technical Review of Golden Grove, including the Gossan Valley Resource adds 0.4Mtpa for seven years from 2025 based on full conversion of the current 3Mt of potential stope inventory (2.5Mt of zinc ore and 0.5Mt of copper ore). The BDA Technical Review of Golden Grove has postulated extensions to the Gossan Valley resource to extend mining to 2035.
- We include Gossan Valley and model to 2035 in our base case for valuation purposes.

Figure 38: Model case by ore category – projections include Gossan Valley



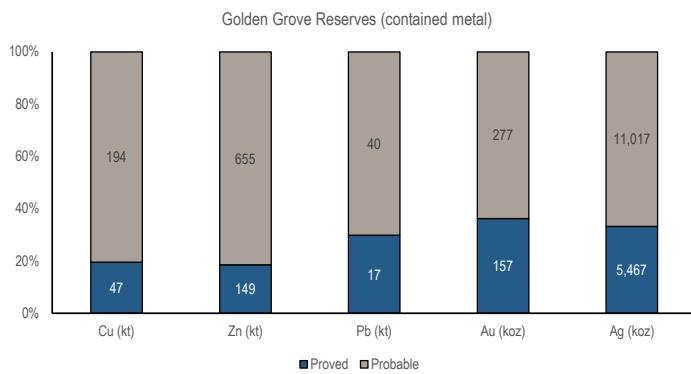
Source: BDA Technical Review of Golden Grove

Resources

- **Total Resources** (Figure 42) 57.8Mt at 1.6% Cu, 4.5% Zn, 0.3% Pb, and 0.7g/t Au for 926kt contained copper, 615kt contained zinc and 1.3Moz Au. Measured & Indicated sub-set accounts for > 80% of ore tonnes and contained metal with 47.6Mt M+I containing 785kt Cu / 2,137kt Zn.

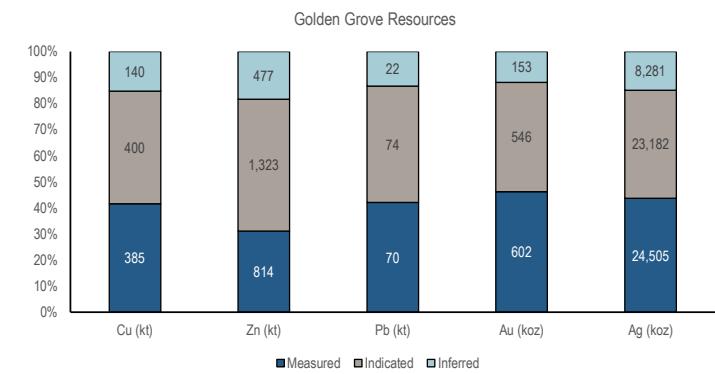
- **Resources by location:** Gossan Hill accounts for 68% of the total resources by tonnage, Scuddles contains 20% and Gossan Valley 12%. The two largest orebodies are Xantho and Xantho extended with combined resources of 10.4Mt and Hougoumont with around 6.1Mt.
- **Implied mine life** based on Total Resource is ~36 years at 1.6Mtpa rate (ex. Gossan Valley) or ~30 years at 2.0Mtpa rate on Gossan Valley inclusion. Implied mine life based purely on Measured & Indicated Resource (i.e. excluding the lowest confidence Inferred category) is ~30 years at 1.6Mtpa / ~24 years at 2.0Mtpa.
- **Our base case modelling** assumes a mine life to 2035 and models at ~1.44% Cu and ~5.70% Zn over LOM.

Figure 39: Reserves; Contained metal by classification (kt/koz, %)



Source: Company data

Figure 40: Resources; Contained metal by classification (kt/koz, %)



Source: Company data

Reserve & Resource restatements are undertaken annually, with next publication due early CY2022. There is potential for periodic exploration updates with latest assay results from broad ranging exploration program (infill, extensional and greenfield) prior to annual restatement.

Figure 41: Golden Grove Ore Reserves (as at 30 June 2020)

Golden Grove Group Reserves (June 2020)	Tonnage Mt	Cu %	Zn %	Pb %	Au g/t	Ag g/t	Cu kt	Zn kt	Pb kt	Au koz	Ag koz
Primary Zinc											
Proved	2.5	0.9%	5.8%	0.6%	1.4	54	22	144	16	112	4,255
Probable	8.8	1.6%	7.4%	0.5%	0.9	36	145	650	40	255	10,232
Total (primary Zinc)	11.3	1.5%	7.0%	0.5%	1.0	40	167	794	56	366	14,487
Primary Copper											
Proved	0.9	2.3%	0.2%	0.0%	0.8	16	21	2	0	24	456
Probable	1.9	2.5%	0.2%	0.0%	0.4	13	49	5	0	22	785
Total (primary Copper)	2.8	2.4%	0.2%	0.0%	0.5	14	69	7	1	46	1,241
Primary Gold											
Proved	0.2	2.0%	1.2%	0.4%	2.9	105	4	3	1	21	756
Probable	0.0	0.0%	0.0%	0.0%	0.0	0	0	0	0	0	0
Total (primary Gold)	0.2	2.0%	1.2%	0.4%	2.9	105	4	3	1	21	756
Ore Reserve											
Proved	3.6	1.3%	4.1%	0.5%	1.4	47	47	149	17	157	5,467
Probable	10.7	1.8%	6.1%	0.4%	0.8	32	194	655	40	277	11,017
Total Ore Reserves	14.3	1.7%	5.6%	0.4%	0.9	36	241	804	57	433	16,484

Source: Company data

Figure 42: Golden Grove Ore Resources (as at 30 June 2020)

Golden Grove Group Mineral Resources (June 2020)	Tonnage Mt	Cu %	Zn %	Pb %	Au g/t	Ag g/t	Cu kt	Zn kt	Pb kt	Au koz	Ag koz
Primary Zinc											
Measured	8.2	0.5%	9.0%	0.7%	1.2	61	43	738	61	312	16,007
Indicated	11.6	0.6%	10.9%	0.6%	0.9	38	74	1,265	66	330	14,070
Inferred	4.8	0.4%	9.4%	0.4%	0.5	33	21	449	19	83	5,061
Total	24.6	0.6%	10.0%	0.6%	0.9	44	138	2,452	146	725	35,138
Primary Copper											
Measured	14.4	2.4%	0.4%	0.0%	0.6	17	341	63	7	277	7,746
Indicated	12.4	2.5%	0.4%	0.0%	0.5	19	309	44	4	181	7,441
Inferred	5.0	2.3%	0.3%	0.0%	0.3	15	118	16	2	55	2,539
Total	31.9	2.4%	0.4%	0.0%	0.5	17	767	122	13	512	17,546
Oxide Copper											
Measured	0.0	0.0%	0.0%	0.0%	4.4	84	0	0	0	4	78
Indicated	0.4	3.2%	0.0%	0.0%	0.6	5	14	0	0	9	67
Inferred	0.0	2.4%	0.0%	0.0%	0.1	6	0	0	0	0	1
Total	0.5	3.0%	0.0%	0.0%	0.9	10	14	0	0	13	146
Partial Oxide Zinc											
Measured	0.1	1.2%	10.2%	1.8%	2.4	164	2	13	2	10	674
Indicated	0.4	0.9%	3.4%	0.8%	1.9	117	4	15	3	25	1,603
Inferred	0.3	0.5%	3.9%	0.5%	1.4	80	2	13	2	15	860
Total	0.9	0.8%	4.6%	0.9%	1.8	110	7	41	8	50	3,138
Mineral Resources											
Measured	22.7	1.7%	3.6%	0.3%	0.8	34	385	814	70	602	24,505
Indicated	24.9	1.6%	5.3%	0.3%	0.7	29	400	1,323	74	546	23,182
Inferred	10.1	1.4%	4.7%	0.2%	0.5	25	140	477	22	153	8,281
Total Resources	57.8	1.6%	4.5%	0.3%	0.7	30	926	2,615	166	1,301	55,968

Source: Company data

- **Grade reconciliation POSITIVE.** A review of historical mine to mill grade reconciliation within the BDA Technical Review of Golden Grove reveals positive grade reconciliation across all contained metals for the period 2017-2020. This includes 5% positive reconciliation on primary Cu and Zn ores, 22% for Pb and 13% Au.

Figure 43: Golden Grove: Ore mined vs ore milled reconciliation of contained metal; Positive across all metals

2017-2020	Tonnage (MT)	Metal Cu (kt)	Metal Zn (kt)	Metal Pb (kt)	Metal Au (koz)	Metal Ag (kt)
Ore mined claimed (1)	4,844	75.4	249.5	28.9	246.5	6,921.6
Ore milled (2)	4,875	79.3	260.8	35.3	279.1	8,176.5
Reconciliation (2) vs (1)	101	105	105	122	113	118

Source: Company data

- There is no indication from the company or within the BDA Technical Review of Golden Grove as to whether positive grade reconciliations will be taken into account within the next Reserves / Resource restatement to account for this experience, although nor is there extensive grade control drilling to support its continuation.

Operating overview

GG process plant has operated continuously since 1990, and produces three different types of concentrates subject to ore feed type.

Concentrates produced:

- Copper concentrate LPM (low precious metal) or HPM (high precious metal) subject to ore feed
- Zinc concentrate
- Lead HPM concentrate

Processing has historically been undertaken on a campaign (batch) basis, necessitated by processing of separate copper and zinc-lead ores. Campaigning has been sub-optimal from a recovery and plant utilisation perspective with typical 6-12 hours plant downtime on each change in campaign as flotation tanks are fully drained, and changes between campaigns often occurring every two weeks.

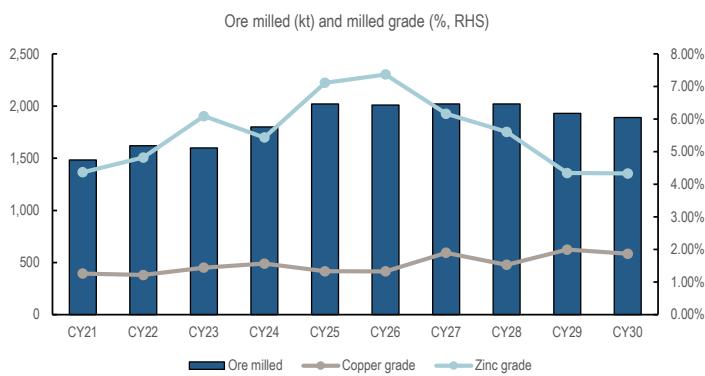
Recent investment by EMR to upgrade GG's processing capability via installation of a triple flotation system has addressed this inefficiency. The system allows for treatment of blended ore without the need for batch processing, with recovery of copper, zinc and lead sequentially to produce three separate concentrates.

The plant upgrade was completed MarQ21 with commissioning reported to have progressed well through JunQ21 to date.

Plant throughput history and budget profile:

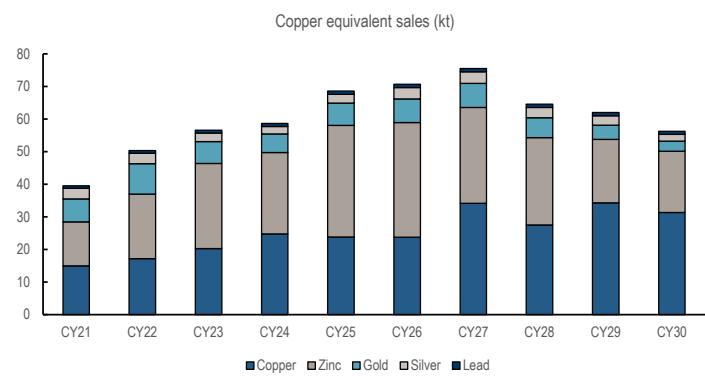
- **LOM target ~1.6Mtpa** per base case provided in the BDA Technical Review of Golden Grove. This increases to ~2.0Mt from 2025 under the Consolidated (upside) case assuming mining at Gossan Valley in the BDA Technical Review of Golden Grove.
- **2021 budget 1.483Mt**. MarQ21 YTD 0.28Mt for annualised 1.1Mt, however Q1 is not representative of go-forward rate as it was impacted by various planned downtime events including a 12-day maintenance outage and shutdown for sequential flotation tie-in and commissioning.
- **2020 actual 1.377Mt** (at 95% of mined rate 1.442Mt)
- **2019 actual 1.291Mt** (at 94% of mined rate 1.373Mt)
- **2018 actual 1.248Mt** (at 103% of mined rate 1.215Mt)
- **Credit Suisse**: We base modelling on the assumption that Gossan Valley is progressed and model a 2Mtpa mining / mill rate from 2025 to the LOM.

Figure 44: CS base case – Mill throughput and grades



Source: Credit Suisse estimates

Figure 45: CS base case – Golden Grove Cu-eq sales



Source: Credit Suisse estimates

Optimisation opportunities

- A range of optimisation opportunities have been identified and are to be pursued. Two key projects across plant and mining that have/are currently being undertaken with near term (and enduring) benefit are:
- **Triple flotation – as discussed above:** The installation supports increased plant run-time lifting the expected processing capacity of the plant by 0.1Mtpa to 1.8Mtpa. Commissioning now complete with ramp-up underway. Triple flotation also has positive implications for mining efficiency, reducing the requirement to demarcate separate copper and zinc ores, which had been a focus for batched plant feed.

- **Increasing mining backfill capacity:** Mine production is dependent on a cemented hydraulic plant delivering fill as required to mine voids. 29Metals has plans to supplement the hydraulic plant at Gossan Hill with paste filling to improve the turn-around time for stopes. The curing time of paste will be four days to achieve required strength compared to 7-14 days for CHF. Paste fill should support an increase in mining rate to 1.6Mtpa (mining optimisation) by improved extraction sequencing as 6-8 stopes are mined monthly. A paste fill plant has been identified which GG is considering hiring for a 3- to 5-year contract. Some modifications may be required but the paste fill plant is planned to start in Q4 2021.

Other planned works include:

- **Gossan Valley mine / mill rate increase.** Potential to increase the milling rate to 2Mtpa subject to Gossan Valley development, with Feasibility Study due 2021. Conceptual Gossan Valley plan (included within the 'Consolidated' LOM plan of the BDA Technical Review of Golden Grove) adds ~0.4Mtpa mining inventory and supports mill expansion from 1.8Mtpa to 2.0Mt from 2024 to 2029, via updates to the grinding circuit and debottlenecking the concentrate thickening and dewatering. Total Gossan Valley capital cost estimated at \$205mn (PFS), excluding any contingency (undefined). Gossan Valley Resource 6.1Mt at 6.7% Zn, 0.9% Cu.
- **Xantho extended optimisation.** Potential to reduce development costs via optimising sub-level intervals applied in Xantho Extended, and bringing forward Xantho Extended ore which is higher grade.
- **Cervantes ore body.** Accelerating drilling and technical work associated with the Cervantes ore body (Resource includes 2.3Mt @ 6.9% Zn, 1.1% Cu) with potential to bring forward Cervantes relative to the LOM plan. We note the BDA Technical Review of Golden Grove views Cervantes contribution and scheduling within the mine plan as "unrealistic" and "Conceptual" in nature at this time, subject to further Resource delineation, and that the "mine production schedule as presented has significant risk". Cervantes initial grades appear positive suggesting a strong possibility Cervantes zone will be an area of future exploration focus. However the orebody is deep, and would require substantial development to access so it probably requires ore reserve growth. We would expect mine plans to be refined as required to accommodate Cervantes subject to exploration results. Its inclusion is long dated, hence no imminent need for definition albeit we include it in our base case.

Mine life profile and projections

The mine life suggested by 29Metals is 10+ years and they have suggested there is sufficient inventory (reserves plus additional resources and exploration targets) to support 15 years.

We model to 2035 including Gossan Valley, although we inflate the technical report capex profile by 10% from 2026 to account for uncertainty in long term estimates.

Implicit in a 15-year mine life is a high degree of confidence around conversion of Resource to Reserve and exploration success in extending known resources into mineable inventory at base case ore grades.

Such a high reliance on various resource and undiscovered ore (rather than reserves) carries elevated risk. We note however, GG's strong track record expanding resource and reserves under EMR's stewardship since 2017, as it has increased its drilling investment. Mineralized intersections and largely open ore bodies (the extent of the orebodies not yet fully defined) are mitigating factors suggesting a strong possibility of progressive Reserve expansion and depletion replacement.

- **GG Consolidated plan including Gossan Valley** (Figure 46, Figure 47). Mine life 2030; Throughput ~2.0Mtpa; Average production 2021-2030 (inclusive) of 93/27ktpa Zn/Cu; AISC variable YoY with LOM US\$1.03/lb Cu.
- **We assume mine life to 2035** (15 years vs 10+ per 29Metals, based on the assumption of extensions to current reserves); throughput ~2.0Mtpa from 2025 including Gossan Valley; Average production 2021-2035 (inclusive) of 98/26ktpa Zn/Cu; AISC variable YoY with LOM US\$0.97/lb.

GG (Inc. Gossan Valley) LOM operating estimates

Figure 46: GG Production Schedule incl. Gossan Valley (BDA Technical Review)

Item	Unit	Calendar Years									
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Mined											
Gossan Hill	Mt	1.23	1.29	1.38	1.51	1.56	1.58	1.57	1.53	1.41	1.24
Scuddles	Mt	0.29	0.33	0.21	0.11	0.06	0.04	0.05	0.09	0.21	0.26
Gossan Valley	Mt				0.14	0.41	0.40	0.40	0.40	0.40	0.40
<i>Ore Mined Total</i>	<i>Mt</i>	<i>1.52</i>	<i>1.62</i>	<i>1.59</i>	<i>1.76</i>	<i>2.03</i>	<i>2.02</i>	<i>2.02</i>	<i>2.02</i>	<i>1.91</i>	<i>18.5</i>
Milled											
Tonnes Milled - Zn Ore* (Zn/Pb/Cu)	Mt	0.69	1.15	1.05	1.16	1.43	1.57	1.47	1.37	1.20	1.11
Grade Zn %		6.4	6.8	9.3	8.4	10.1	9.4	8.5	8.3	6.9	7.4
Tonnes Milled - Cu Ore	Mt	0.59	0.47	0.54	0.64	0.60	0.45	0.55	0.65	0.82	0.79
Grade Cu %		2.4	2.2	2.4	2.4	2.9	2.8	3.1	2.9	3.1	3.2
Tonnes Milled - CuZn Ore	Mt	0.17									0.17
Grade Cu %		1.4									1.4
Grade Zn %		6.9									6.9
<i>Total Ore Milled</i>	<i>Mt</i>	<i>1.48</i>	<i>1.62</i>	<i>1.60</i>	<i>1.80</i>	<i>2.03</i>	<i>2.02</i>	<i>2.02</i>	<i>2.02</i>	<i>1.90</i>	<i>18.51</i>
Concentrate											
<i>Total Concentrate Produced</i>	<i>kt</i>	<i>216.8</i>	<i>256.6</i>	<i>306.9</i>	<i>329.7</i>	<i>412.8</i>	<i>434.7</i>	<i>447.4</i>	<i>388.8</i>	<i>358.5</i>	<i>339.8</i>
Contained Metal in Concentrate											
Zinc kt		55.5	69.4	88.3	87.5	132.4	134.9	112.2	102.6	73.7	72.3
Copper kt		16.4	18.2	21.4	26.3	25.4	26.3	36.5	30.4	36.7	34.1
Lead kt		4.4	5.0	4.7	3.5	5.1	6.9	6.3	5.4	3.8	1.8
Gold koz		40.0	36.1	28.7	24.4	33.7	36.2	37.9	33.3	24.4	17.5
Silver Moz		1.66	1.41	1.19	1.06	1.33	1.77	1.85	1.69	1.52	1.09
<i>Increase in Cont. Metal with GV</i>											
Zinc %		0	0	0	12	27	20	21	24	44	44
Copper %		0	0	0	1	7	13	10	12	13	15
<i>Note: 2021-2030 based on FM forecast; *Zn ore is strictly Zn/Pb/Cu ore and from 2021 will be treated through the sequential flotation circuit producing zinc, copper and HPM concentrates</i>											

Source: BDA Technical Review of Golden Grove

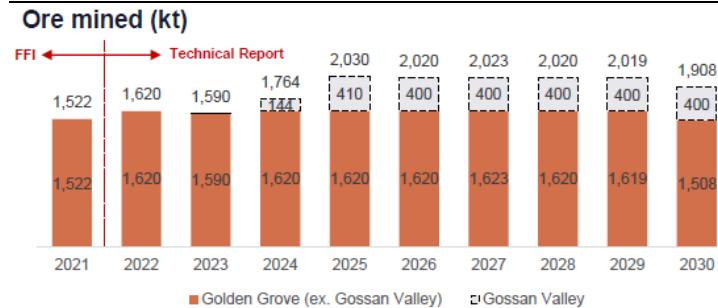
Figure 47: GG Operating Costs incl. Gossan Valley (BDA Technical Review)

Item	Unit	Calendar Years												
		Actual 2018	Actual 2019	Actual 2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Physicals														
Ore Mined	Mt	1.21	1.37	1.44	1.52	1.62	1.59	1.76	2.03	2.02	2.02	2.02	1.91	18.51
Ore Milled	Mt	1.25	1.29	1.38	1.48	1.62	1.60	1.80	2.03	2.02	2.02	2.02	1.90	18.51
Payable Copper	Mlbs	29.0	43.0	39.0	34	37.14	42.75	56.32	52.33	54.02	75.20	62.57	76.15	70.68
Site Op Costs														
Mining A\$M		129.9	167.9	188.6	204.3	196.5	195.9	261.7	255.8	254.6	241.6	229.9	217.5	203.6
Less Cap Dev A\$M		-22.1	-45.9	-48.0	-34.2	-31.6	-34.3	-69.5	-47.5	-54.3	-35.9	-38.1	-39.1	-40.1.2
Mining Op A\$M		107.8	122.0	140.7	170.1	164.9	161.6	192.1	208.3	200.2	205.7	191.9	178.4	186.0
Mill A\$M		22.0	26.4	30.3	31.7	33.2	33.4	34.2	35.0	36.9	36.3	35.8	34.8	32.3
Maintenance A\$M		25.6	31.5	32.8	32.4	32.4	31.9	33.1	32.3	32.3	32.3	32.3	32.3	32.3
Site Serv, O/heads A\$M		20.4	21.7	23.9	26.7	23.8	23.8	24.3	24.3	24.3	24.3	24.3	24.3	24.4
Port and Transport A\$M		9.1	10.5	10.3	11.6	12.5	14.8	16.1	19.9	20.9	21.5	18.8	17.3	16.4
<i>Total Site Costs</i> A\$M		184.9	212.1	238.0	272.5	266.7	265.4	299.9	319.9	314.7	320.1	303.0	287.1	292.3
Other Op Costs														
Corp Costs A\$M		2.0	2.9	3.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Realisation Costs A\$M		31.0	51.0	75.8	46.9	76.3	81.8	84.0	108.3	109.2	106.1	93.7	81.8	78.1
Royalty A\$M		17.4	20.0	16.1	19.1	18.2	22.0	25.0	30.3	31.5	33.3	29.1	27.8	25.8
By-product Credit A\$M		295.0	357.0	336.0	291.2	306.8	355.4	350.1	510.5	532.2	467.5	424.8	313.5	283.4
<i>Total Op Costs</i> A\$M		-59.7	-71.0	-24	47.2	54.4	13.8	58.8	-52.1	-76.9	-8.0	1.0	83.2	112.8
Unit Costs														
Mining (incl Cap Dev) A\$/t mined		106.9	122.3	130.8	134.2	121.3	123.2	148.4	126.0	126.0	119.4	113.8	107.7	106.7
Mining Op A\$/t mined		88.7	88.9	97.5	111.8	101.8	101.6	108.9	102.6	99.1	101.7	95.0	88.3	98.0
Milling (incl Mtce) A\$/t milled		38.1	44.8	45.7	43.2	40.5	40.9	37.4	33.2	34.3	34.0	33.7	33.2	34.0
G&A/Trans/Port A\$/t milled		23.6	24.9	24.8	25.8	22.5	24.3	22.4	21.8	22.5	22.8	21.4	20.6	21.3
<i>Total Site Costs</i> A\$/t milled		148.0	164.2	172.5	183.7	164.7	166.4	166.5	157.7	155.9	158.6	150.1	142.2	153.6
Unit Costs US\$														
Cu - C1 Costs US\$/lb		-1.90	-1.38	-0.01	0.53	0.71	-0.14	0.44	-1.15	-1.46	-0.40	-0.33	0.53	0.90
Cu - AISC US\$/lb		-0.57	-0.20	1.43	2.12	2.01	1.07	1.93	0.16	-0.15	0.41	0.65	1.33	1.45
<i>Note: Mining Op costs inclusive of grade control and resource drilling; totals are from 2021 to 2030; AISC = All-In Sustaining Cost</i>														

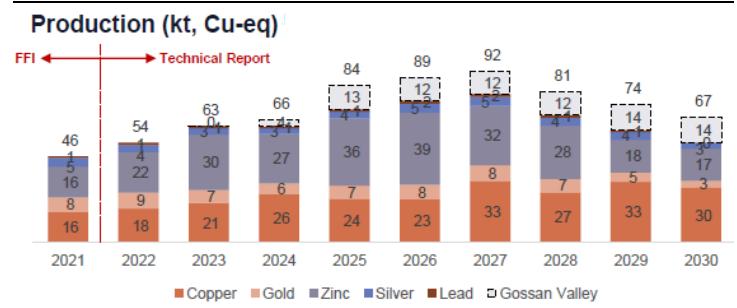
Source: BDA Technical Review of Golden Grove

Figure 48: GG Capex incl. Gossan Valley (BDA Technical Review)

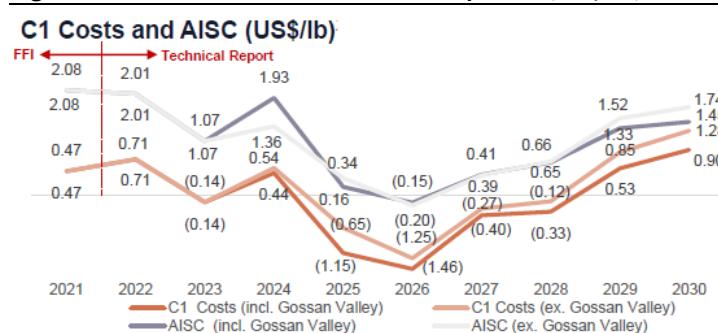
Capital Category	2021 ASM	2022 ASM	2023 ASM	2024 ASM	2025 ASM	2026 ASM	2027 ASM	2028 ASM	2029 ASM	2030 ASM	Total ASM
Capitalised Development	34.2	31.6	34.3	69.5	47.5	54.3	35.9	38.1	39.1	16.7	401.2
Expansion	8.4	10.1	64.8	14.3	12.5	6.6	3.0				119.7
Sustaining	16.2	16.2	14.7	20.4	16.1	11.6	14.0	16.5	16.2	11.2	153.1
Exploration	7.4				5.9	5.9	5.9				25.1
Total	66.1	57.8	113.8	110.2	82.0	78.4	52.9	54.5	55.2	27.9	699.1

Figure 49: Golden Grove – Ore mined (kt)

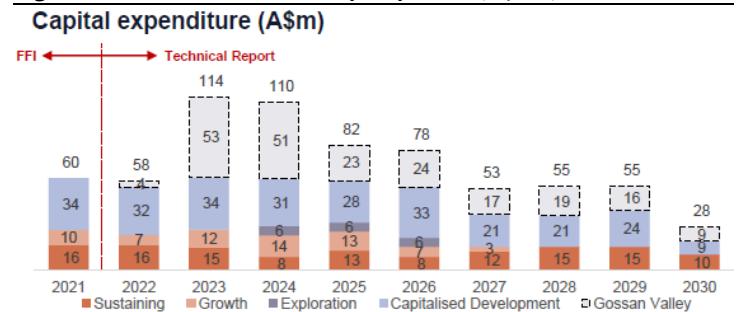
Source: 29Metals (2021), BDA (2022+)

Figure 50: Golden Grove – Production (kt, Cu-equivalent basis)

Source: 29Metals (2021), BDA (2022+)

Figure 51: Golden Grove – C1 and ASIC profile (US\$/lb)

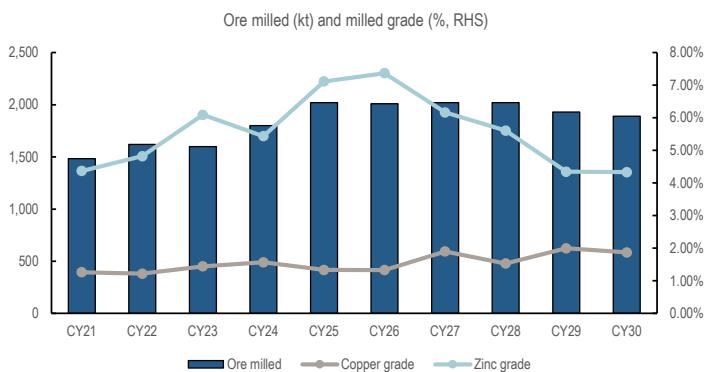
Source: 29Metals (2021), BDA Technical Review of Golden Grove (2022+)

Figure 52: Golden Grove – Capex profile (A\$mn)

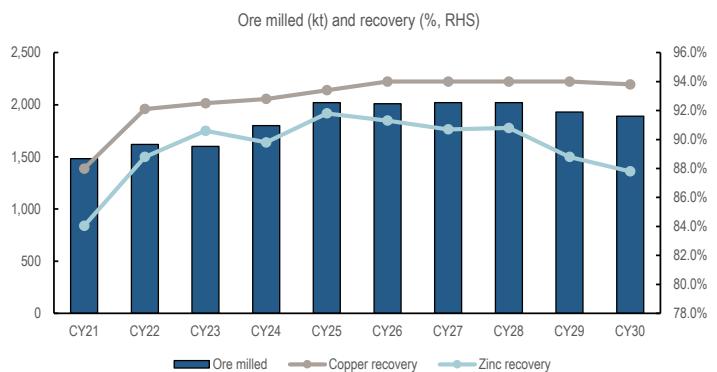
Source: 29Metals (2021), BDA Technical Review of Golden Grove (2022+)

Credit Suisse modelling notes:

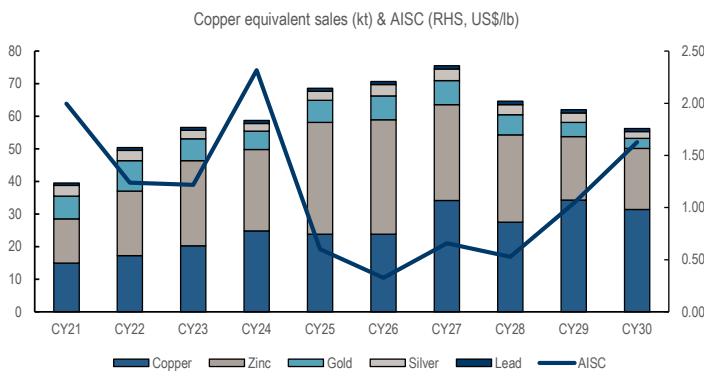
- We base our modelling on the BDA technical report including mining at Gossan Valley. We model a mine life extending to 2035. See Figure 53 to Figure 56 for mill throughput and production profiles.
- We make some moderating adjustments to our estimates vs those provided by the BDA Technical Review of Golden Grove, taking a modestly more conservative approach to capex, production and costs beyond 2030. We increase capex over LOM by 10% to account for overruns and to protect against potential capex increase on the Gossan Valley estimates.
- We include end of life \$77mn site closure costs based on a 10% increase to the \$70mn indicated within the BDA Technical Review of Golden Grove as the estimated closure liability (but is absent from the GG Base Case or Consolidated Case estimates).
- Our DCF attributes 100% of our modeled estimates and uses a WACC of 8% (real).
- We apply CS house commodity price forecasts which are less favourable than those on which GG's unit costs are based.

Figure 53: CS base case – mill throughput and grades

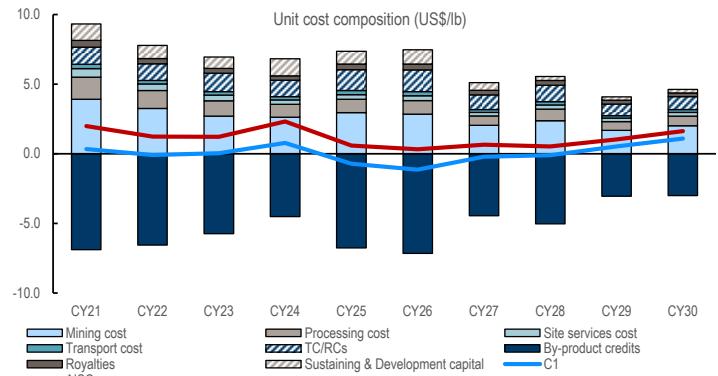
Source: Credit Suisse estimates

Figure 54: CS base case – mill throughput and recoveries

Source: Credit Suisse estimates

Figure 55: CS base case – Cu-eq sales (kt) and AISC (US\$/lb)

Source: Credit Suisse estimates

Figure 56: CS base case – unit costs (US\$/lb payable copper)

Source: Credit Suisse estimates

Exploration

Group exploration budget for 2021 covering GG / CC is \$11mn, the majority of which relates to GG and is said to be best basis for go-forward annual exploration spend.

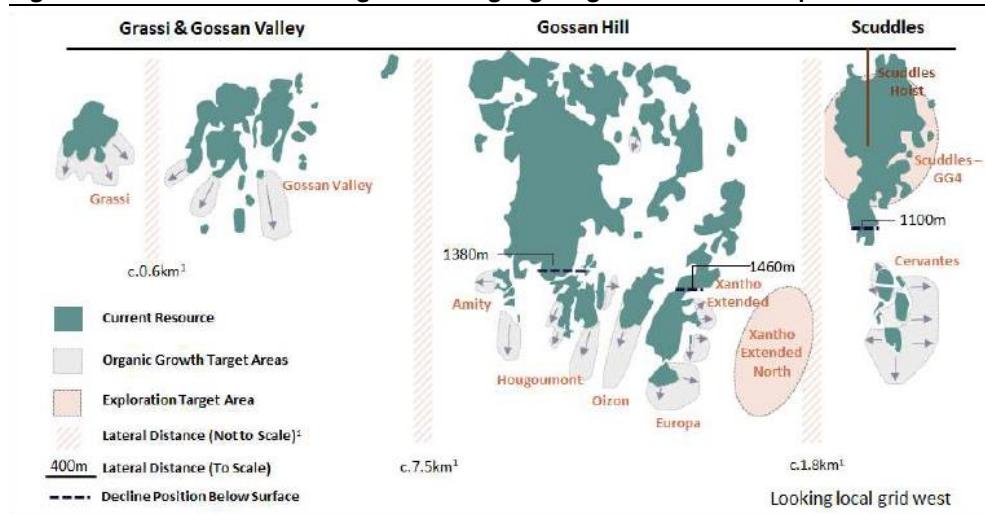
The new ore zones that GG is defining are not all closed off. 29Metals indicates that potential extensions are near mine exploration opportunities (Figure 57) that are not included in the current resource shell and mine planning, offering potential life extension and production optimisation benefits. 29Metals notes that resources to be explored for extensions include:

Near mine exploration targets

- **Cervantes.** Existing resource 2.3Mt @ 6.9% Zn, 1.1% Cu, 34g/t Ag, 0.5g/t Au. Deepest ore body within the Scuddles deposit, 270m below the Scuddles decline with Resource open at depth and along strike. A key area of focus based on resource delineated to date and extensional drill data. 2021 drill plan includes 7,900m of resource extension drilling and 17,700m of resource definition drilling. At the conclusion of drilling a feasibility study is planned to assess its inclusion into the mine plan.
- **Gossan Valley.** Existing resource 6.1Mt @ 0.9% Cu, 6.7% Zn, 0.5g/t Au, 16g/t Ag. Positioned 7km from Gossan Hill mine and currently the subject of a feasibility study assessing its potential to become a 3rd mining front for GG, providing ore feed to increase aggregate mill feed to 2Mtpa. The resource is open down plunge and along strike in discrete areas.

- **Xantho Extended, Europa.** Existing resource 9.0Mt @ 1.9% Cu, 8.1% Zn, 0.9g/t Au, 34g/t Ag. Access via a decline has already reached the top of the potential mining zone. The resource is open at depth and along strike. First production from Xantho Extended is due SepQ-21. The 2021 drill budget is for 6900m of Resource extension and 10,400m of Resource and stope definition drilling.
- **Oizon.** Existing resource 3.4Mt @ 2.3% Cu, 2.1% Zn, 0.5g/t Au, 26g/t Ag. Positioned 300m north of the Hougoumont decline. A decline is under development to link Hougoumont and Xantho Extended, and will also provide access to Oizon. The resource is open at depth, with drilling to focus on part extensional, part definition to improve confidence ahead of mine plan revision that may include it for 2023. 2021 drill plan 2,000m of each Resource definition and extension.

Figure 57: Golden Grove – Long section highlighting Resource and exploration



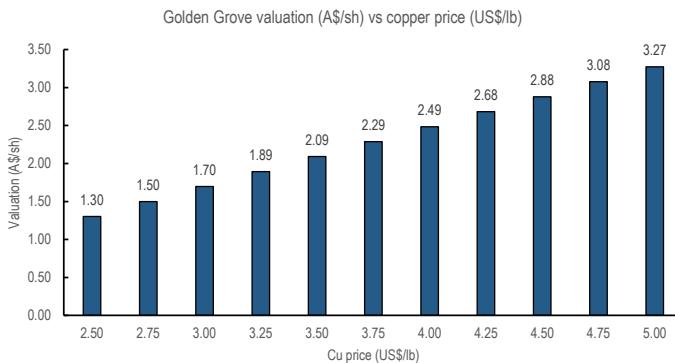
Source: 29Metals

Regional exploration targets

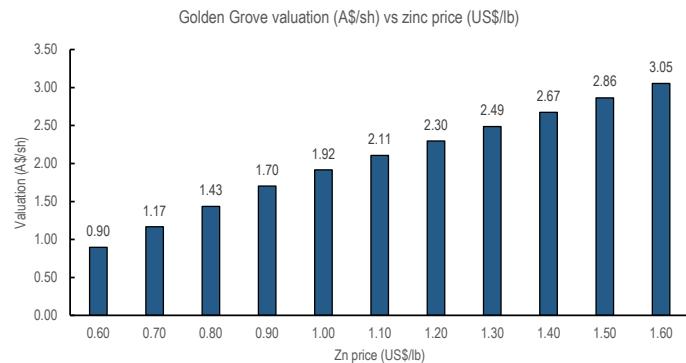
GG mining leases cover 129km². 29Metals has regional exploration planned across the GG lease tenements as it considers exploration to be immature outside the immediate mine areas. In addition to further VHMS deposits, it intends to test for lode gold deposits. It plans exploration drilling over a number of leases targeting favourable host rocks for VHMS, and regional structures for gold. It considers it has several drill-ready targets, according to 29Metals.

Valuation

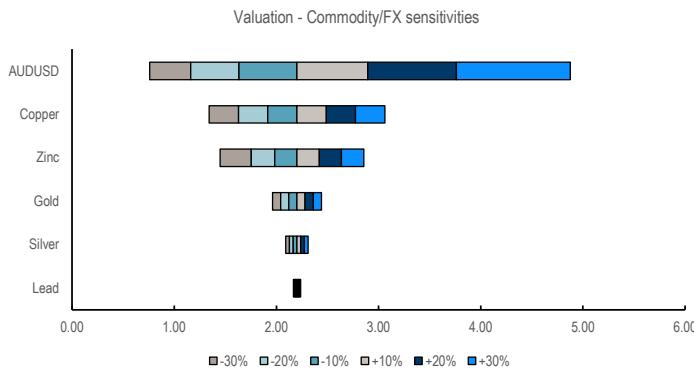
- **Base case value (Golden Grove).** Our base case valuation is A\$2.20/sh, forming 82% of our group \$2.70/sh NPV. Our valuation is NPV-based and utilises an 8% (real) WACC as well as our CS house commodity price forecasts.
- Spot commodity/FX value (Golden Grove) \$3.41/sh.

Figure 58: Golden Grove valuation sensitivity - Copper

Source: Credit Suisse estimates

Figure 59: Golden Grove valuation sensitivity – Zinc

Source: Credit Suisse estimates

Figure 60: Golden Grove valuation commodity/FX sensitivity (A\$/sh)

Source: Credit Suisse estimates.

n.b. AUDUSD is reversed.

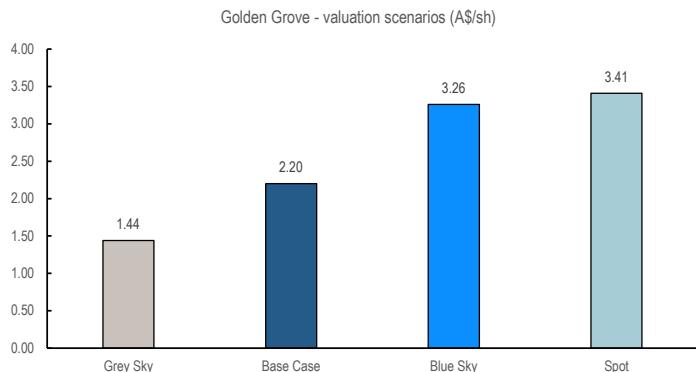
Golden Grove principal risk factors

We highlight below, factors that we view as the principal risks to our operating estimates, and by extension, our derived valuation of GG. We caution this is by no means an exhaustive list, noting there are a range of risk factors and considerations relevant to GG including many inherent mining risks.

We include a more detailed risk register in Figure 106.

Resource and mine life estimation risk

- All three mine life scenarios presented i.e. GG Base Case, GG Consolidated (including Gossan Valley) and Credit Suisse base case have a heavy reliance on Measured and Indicated, and to a lesser extent Inferred, unclassified and yet to be defined extensional ore, rather than being predicated on higher confidence reserves (87% of ore production over first ten years of GG Base Case is based on M+I Resource, 13% Inferred). This is partly a function of where GG is in its turnaround after the renewed investment, with results to date suggesting a high likelihood of continued Resource definition and Resource to Reserve conversion. Be that as it may, higher utilisation of these resource categories in the mine plan elevates the risk that they may be smaller or lower grade than expected.

Figure 61: Golden Grove valuation range scenarios

Source: Credit Suisse estimates

- We also note that the BDA Technical Review of Golden Grove concludes that the mine schedule from 2031 to 2035 in its opinion is "largely conceptual, with accelerated production rates from several orebodies above achievable capacity and the inclusion of resource extensions that have yet to be defined" (Figure 38).
- Implicit in our base case valuation range is the commissioning and execution of Gossan Valley, which remains subject to an updated Feasibility Study and FID. We understand that the FS is due in the second half of 2021. Based on the Gossan Valley presented in the BDA reports, we estimate an NPV of ~A\$70mn. Further, we would expect recent cost inflation and supply chain tightness increase the risk of worsened project economics in the updated FS. Although we note that the project may be justifiable even on thin economics given it will increase 29M's ability to drill below the 400m level at Gossan Valley.

Mine rate risk

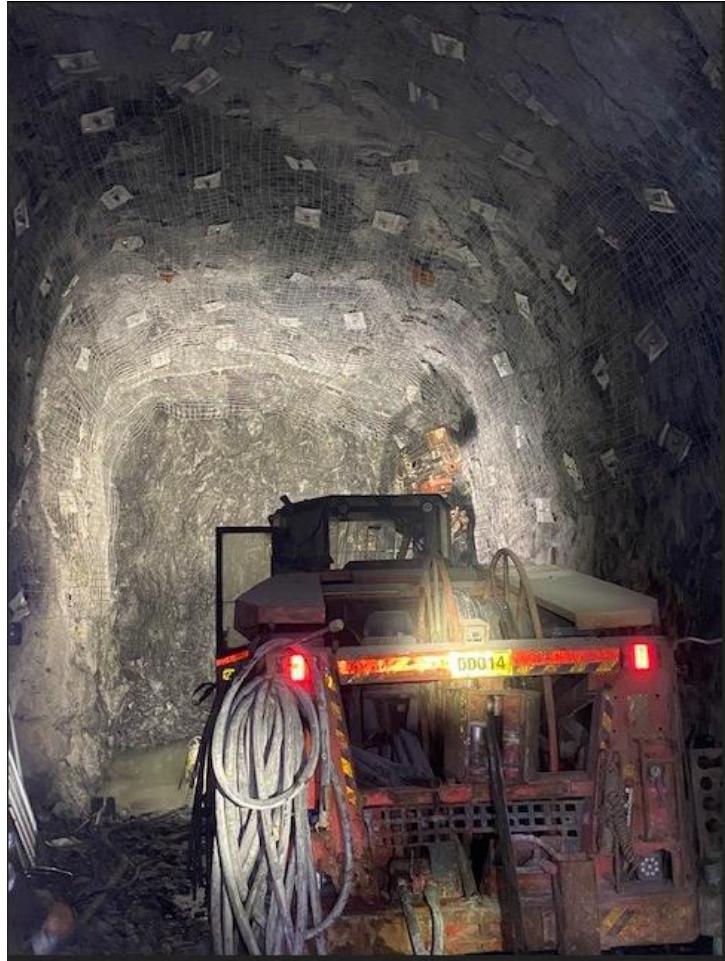
- The two mine life scenarios presented in BDA Technical Review of Golden Grove i.e. GG Base Case, GG Consolidated (including Gossan Valley); and also Credit Suisse base case assume a sustained mining rate above those achieved over the past three years 2017-2020, a period where mining has consistently failed to match mill capacity (Consolidated + Credit Suisse scenarios assume 0.4Mtpa above the GG Base Case). Increasing the mining rate to match the mill capacity of 1.6Mtpa is expected to be enabled by acquiring a paste plant to support more rapid stope turnover, as well as opening new mining zones. The additional step of 0.4Mtpa to 2Mtpa is contingent on the execution of Gossan Valley. We note the mining contractor – Byrnecut – is highly regarded in underground mining, which mitigates some risk in our view.
- GG is a seismically active mine with 78 reported events over the past 12 months. As mining is undertaken at greater depth, the risk of a severe seismic event increases as stress levels rise (see Figure 57 for deep mining zones below the current lowest point of mining). This will necessitate increased ground support raising costs as mine depth increases. Again, we point to geotechnical monitoring and the experienced underground operator in mining contractor Byrnecut as a mitigating factor, but note this doesn't prohibit a major event from disrupting mining rates. (Note in Figure 62, the rock bolting and meshing of Xantho Extended face, at 1440mbs, observed on a site visit).
- The BDA Technical Review of Golden Grove concludes the near term risk to mine production rates relates to development and stope back-filling rates.

Site photos

We attended a GG site visit. We left with the overall impression of an operation that is well managed, with high caliber operating managers, generally engaged staff that are excited about evident change driven under EMR's ownership, and the improving outlook as it seeks to execute on its clearly defined growth plans.

We were able to witness some of the key investments made by EMR to good effect, which should provide enduring benefit to operating efficiencies, e.g. triple flotation process installation, an entirely new mill operating control system, remote bogging technology and new underground machinery to name but a few initiatives.

Figure 62: Ore drive at Xantho Extended ~1400mbs



Source: Credit Suisse

Figure 63: Fleet upgrade – New automated driller



Source: Credit Suisse

Figure 64: Ore conveyer – Scuddles mine to mill (in photo rear)



Source: Credit Suisse

Figure 65: Mill in foreground, Tailings dam in rear



Source: Credit Suisse

Figure 66: Crushed ore and Grinding media stockpiles



Source: Credit Suisse

Figure 67: New mill instrumentation and control room in action



Source: Credit Suisse

Figure 68: New sequential float system operational



Source: Credit Suisse

Figure 69: Copper and Zinc mineralized ore



Source: Credit Suisse

Figure 70: Final concentrate product ready for transport to port



Source: Credit Suisse

Figure 71: Core yard – home to the next Resource upgrade



Source: Credit Suisse

Capricorn – Asset review

Capricorn copper is a lower quality asset than Golden Grove, with relatively high costs and modest production. Given underground operations and restricted orebody size, it seems unlikely that the cost structure of the mine can be greatly lowered. While the potential for resource extensions appears high, the variability in ore styles is an ongoing issue for mill recoveries and concentrate grade, which for the past 18 months has failed to meet the budgeted level.

That said, under the regime of elevated copper prices (above \$3/lb) that we expect for the foreseeable future, there is a good possibility that the mine could generate positive cashflows for many years provided the resources continue to extend on exploration success.

Further upside may come from any exploration success from drill-ready targets in the regional tenements, given that the presence of the mill can unlock value from even modest orebodies.

History

Capricorn is a copper mine located in Queensland, ~120km north of Mt Isa via 40km sealed highway and 80km of secondary gravel roads. It has a long track record with first production via open pit in 1927. It has been held by various owners over time. The underground mine at Mammoth was established in 1970, and has operated more or less continually since that time through to being placed on care and maintenance in 2013. EMR acquired its interest in the asset in 2015. Post feasibility studies and investment, operations restarted in 2017 ahead of EMR achieving full control in 2018.

Capricorn Copper (CC) consists of several structurally controlled, sediment-hosted copper deposits. There are two main styles of mineralisation:

- Breccia-hosted with quartzites (Mammoth and Greenstone);
- Shear-hosted within shales/siltstones (Esperanza, Esperanza South and Pluto).

Major infrastructure includes a sealed airstrip 10km from site, an accommodation camp 4km from site, and high voltage electricity line sourcing electricity from the 320 MW Diamantina power station in Mt Isa.

29Metals notes that A\$200mn has been invested across the business, with many improvements to ore resources, processing and mining implemented.

Drilling of 74,943m between 2016 and 2020 grew mineral resources to 1.1Mt of Cu and establish ore reserves of 0.2Mt Cu at five orebodies. Mining was established at three orebodies to provide operational flexibility. This includes a sub-level caving operation at Esperanza South, which is typically a highly efficient, cost effective mining method.

Various plant upgrades have been facilitated to support greater throughput and more consistent availability rates. These include, upgrades to SAG mill feed chutes, mill liners and lifters – allowing the mill to operate with a high ball charge – modifications to the filter feed thickener, a control system to manage reagents more efficiently, and a range of other modifications. These upgrades provide increased stability and availability which will be needed to achieve 29M's target of increased annual throughput.

Figure 72: Capricorn location; QLD ~120km north of Mt Isa

Source: 29Metals

Reserves and Resources

Figure 74: Capricorn Copper Reserves & Resources

All deposits	Tonnage Mt	Cu %	Ag g/t	Cu kt	Ag koz
Resources					
Measured	5.4	1.8%	6	96	1,110
Indicated	33.8	1.9%	8	638	8,534
Inferred	23.3	1.6%	7	366	5,481
Total	62.5	1.8%	8	1,100	15,125
Reserves					
Proved	1.1	1.9%	8	20	300
Probable	12.3	1.8%	11	220	4,600
Total	13.4	1.8%	11	240	4,800

Source: Company data

Life of mine production is set at 24Mt from 2021-2034, greater than reserves. The BDA Technical Review of Capricorn Copper notes that of the 24Mt mining inventory included in the LOM, 40% is comprised of Inferred and Unclassified material.

Figure 73: Capricorn site layout

Source: 29Metals

40% of the mine plan based on inferred and unclassified material appears high, but we note that the greatest proportion of this material is at the back end of the mine life. We also take comfort that the renewed exploration focus under EMR ownership, including demonstrated resource growth to date and open ore bodies, suggests a good possibility of new resource definition and resource conversion, supporting its projections.

Furthermore, we note the BDA Technical Review of Capricorn Copper highlights CC's robust mine design protocols to ensure there is reasonable infill drilling and ore delineation. This supports near-term projections and suggests a rigorous approach to mine planning.

Negative grade reconciliation. A review of historical mine to mill grade reconciliation within the BDA Technical Review of Capricorn Copper reveals NEGATIVE grade reconciliation on copper grade and contained copper tonnes of 5% for the period 2018-2020. However, we note the BDA Technical Review of Capricorn Copper concludes acceptable reconciliation for tonnes, grade and contained metal for the project for the period reviewed from January 2018 to December 2020.

Figure 75: Capricorn Copper ore mined to ore milled reconciliation (2018-2020)

2018-2020	Tonnage (Mt)	Copper grade (% Cu)	Contained copper (kt)
Ore mined claimed (1)	4.709	1.72	81.074
Ore milled (2)	4.740	1.64	77.619
Reconciliation (2) vs (1)	101	95	95

Source: Company data

Operating overview

Processing. The comminution circuit in the current processing plant was constructed in 1999, and the flotation circuits in 2003. Total capacity is 2.1Mtpa at availability of 91.3%, but it has been operating below that rate over recent years on limited ore availability.

Plant throughput history and budget profile:

- **LOM target ~1.8Mtpa**, with mine and mill both demonstrating achievement of these rates historically (historical tonnages were mine constrained). (Source: BDA Technical Review of Capricorn Copper)
- **2021 budget** 1.624Mt. MarQ-21 YTD 0.41Mt for annualised 1.65Mt – below the conceptual 1.8Mtpa go-forward rate due to a ~1-month cessation of mining from Mammoth and Greenstone zones after a pillar failure on 14 March led to a suspension of operations for investigations. This necessitated a greater reliance on feed from lower-grade Esperanza South. Mining recommenced at Mammoth/Greenstone on 18 April and is not expected to have any lingering impact on mine rate/cost efficiencies. Q1 mill rate was also impacted by a gearbox failure reducing operating capacity by two weeks.
- **2020 actual 1.808Mt** (98% of mine rate 1.847Mt)
- **2019 actual 1.605Mt** (101% of mined rate 1.583Mt)
- **2018 actual 1.326Mt** (102% of mined rate 1.301Mt)
- **Credit Suisse:** We assume 1.73Mtpa mill rate over remaining LOM at 1.90% Cu and 10.16g/t Ag.

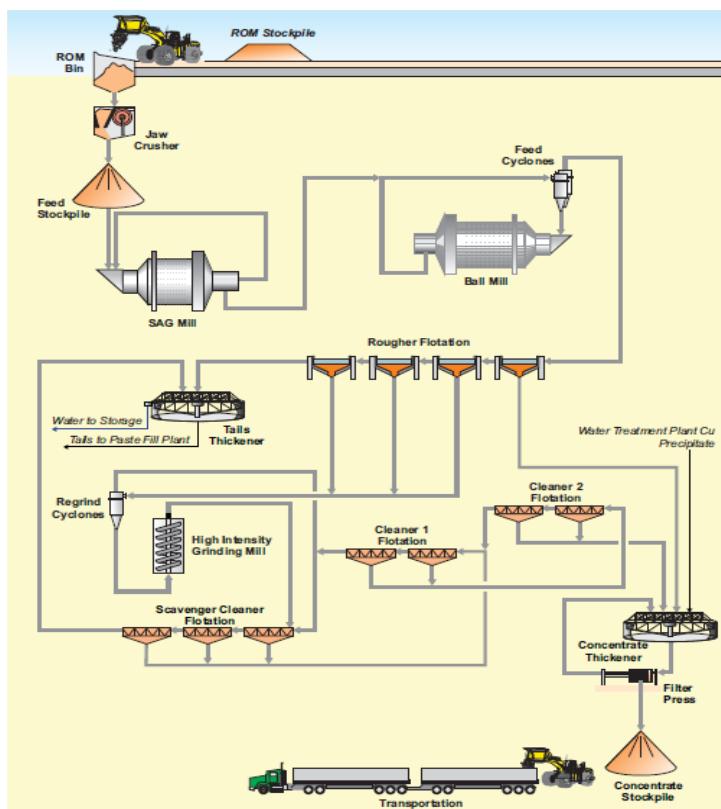
Concentrate production:

- **CC produces a copper concentrate which also contains silver.** In 2020, CC produced 99kt of concentrate with a grade of 22.5% Cu and 58g/t Ag. MarQ21 YTD production 19.7kt concentrate at grade 22.4% Cu containing 4.4kt Cu. Future concentrate production is targeted at 100-119ktpa containing 26% Cu and 120g/t Ag over 2022-2026. From 2027-2034 concentrated production plan is 122-155ktpa, but at lower grade 21.5% Cu, 87g/t Ag on a change to ores with more difficult metallurgical performance. (Source: BDA Technical Review of Capricorn Copper)

- The concentrate is trucked from site for sale to Glencore's Mt Isa smelter, or transported by rail to Townsville for sale to commodities trading firm Trafigura. The concentrate typically contains arsenic, with the arsenic levels depending on the mine domain. Blending of ore sources ensures the arsenic levels remain within marketable levels. Concentrate with higher arsenic levels is sold to Glencore's Mt Isa smelter which does not attract a penalty (sale of equivalent concentrate to offshore smelters would attract a modest penalty with grade of 0.5% As incurring a US\$7.5/t concentrate penalty).
- **The BDA Technical Review of Capricorn Copper highlights that the mineralogy of the ore is complex**, with 14 different metallurgical domains. It notes the metallurgical performance (concentrate grade and recovery) varies widely between domains, with plant performance highly dependent on the feed blend. It also notes that the domains are well categorised with knowledge used to inform mine scheduling and metallurgical forecasting.
- **The BDA Technical Review of Capricorn Copper indicates that the required LOM mill throughput of 1.8Mtpa has been demonstrated**, but the LOM forecast of concentrate grading 26% Cu at 87% recovery may require improved blending of ore domains or developments from metallurgical studies, given the performance in the past 18 months was 22.5% Cu concentrate at 82.5% recovery.

Expert consultants have examined the mill performance and established that underperformance of recovery and concentrate grade is caused by high variability in grain size, mineralogy and texture between mining zones – Greenstone may provide 45% Cu in concentrate with 93% recovery while Esperanza may produce 16% Cu concentrate at 82% recovery.

The recovery at any point in time depends on the mix of ore domains. Ore supply from Greenstone is due to cease in early 2022 meaning ore processing performance may become more volatile subject to the metallurgical characteristics of prevailing ore feed.

Figure 76: Capricorn process flowsheet

Source: 29Metals

Mining:

Mining is contracted to experienced underground operators, Byrnecut, which undertakes all mine development, production drilling, blasting, loading and hauling.

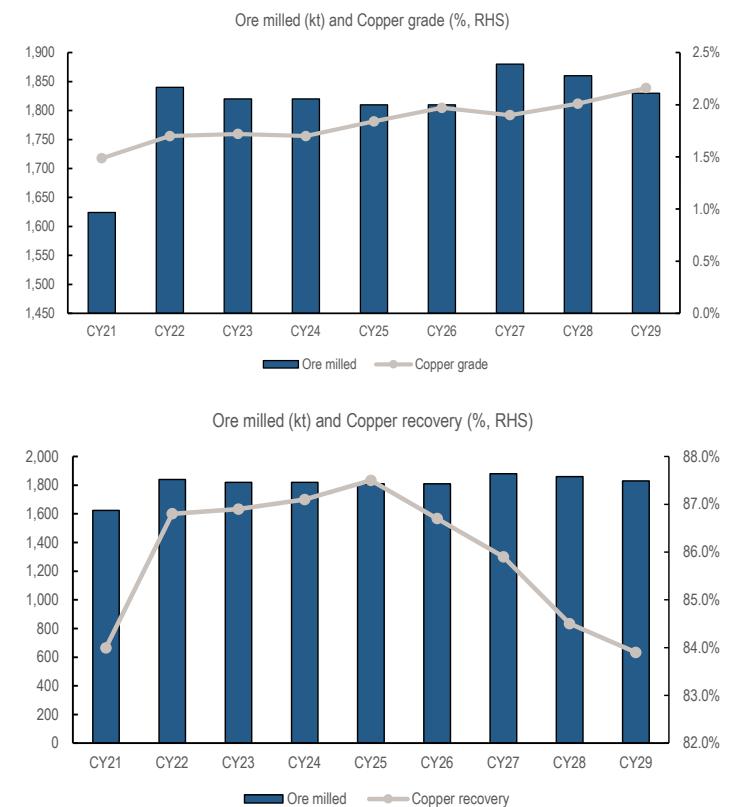
The Capricorn management team provide technical oversight and is responsible for mine planning and grade control drilling. The CC team is also responsible for geotechnical engineering, associated ground support design and management. The BDA Technical Review of Capricorn Copper indicates routine QA/QC is carried out on installed ground support, and refers to established processes and action response.

Credit Suisse: The geotechnical aspect of the operation is well managed by the Capricorn team.

The mine plan comprises mining across five discrete deposits, of which three are currently in production

- **Esperanza South.** RSV 7.1Mt @ 1.57% Cu for 112kt Cu; Currently being mined
- **Mammoth.** RSV 4.1Mt @ 1.94% Cu for 79kt Cu; Currently being mined
- **Greenstone.** RSV 0.5Mt @ 1.81% Cu for 8kt Cu; Currently being mined
- **Pluto.** RSV 1.2Mt @ 2.63% Cu for 32kt Cu; For future development
- **Esperanza.** RSV 0.5Mt @ 1.87% Cu for 9kt Cu; For future development

The majority of current and future production will be sourced from **Esperanza South** which provides ~60% of ore mined. Since the mine restart in 2017, 3.4Mt of Esperanza South ore has been mined at 1.5% Cu. Esperanza South consists of three metallurgical domains with the BDA Technical Review of Capricorn Copper noting widely variable metallurgical performance

Figure 77: Mill throughput – CS Forecasts

Source: Credit Suisse estimates

across domains. The major impact is to concentrate grade, rather than copper recoveries which are typically maintained at above 80%. The mining process used is the low cost sub-level caving.

Mammoth is the other main ore contributor, and has been extensively mined historically. Since the mine restart in 2017, 0.95Mt of Mammoth ore has been mined at 1.9% Cu. The BDA Technical Review of Capricorn Copper notes that mining at Mammoth is planned to extend to 1250mbs, and that "in-situ stress levels increase from moderate to high as mining progresses at depth".

Greenstone was developed under EMRs ownership and is accessed off the Mammoth decline. Since mine restart in 2017, 0.80Mt of Greenstone ore has been mined at 1.7% Cu. In 2019, production ceased due to the loss of a second egress out of the mine as a result of a deterioration in ground conditions. This necessitated a new escape route development with mining recommencing late-2019.

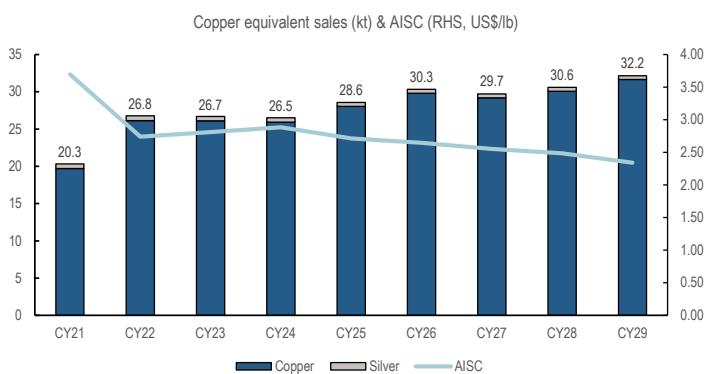
Pluto: mining is due to commence 2026 and will consist of four to six levels. The BDA Technical Review of Capricorn Copper notes that processing of Pluto ore will require a controlled potential sulphidation process to be commissioned to recover oxidised copper minerals by flotation and gravity recovery to recover metallic copper. It notes these are proven technologies and have been provided for in the capital cost estimates.

Esperanza: mining is to be undertaken from 2027 below the existing Esperanza pit which is used for tailings storage. Finalisation of the plan remains subject to geotechnical work, but envisages a 50m pillar below the pit.

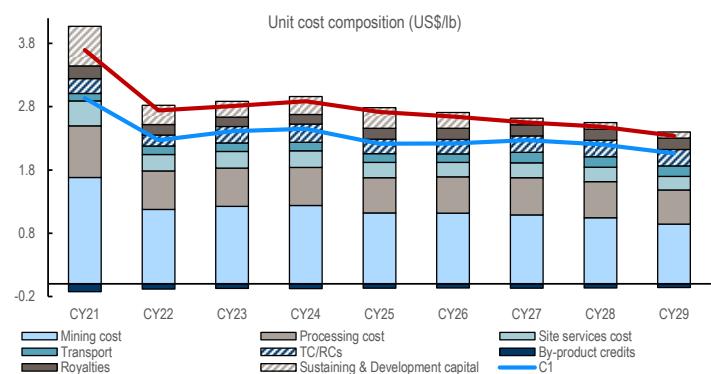
Mine life profile and projections

CC has provided a base case life of mine operating profile which is presented in the BDA Technical Review of Capricorn Copper. We base our modelling on the LOM profile presented, which includes all production, capex and costs as disclosed and estimated by CC.

- CC Base Case (Figure 80, Figure 81, Figure 82). Mine life to 2034; Throughput ~1.8Mtpa; Average production 2021-2029 (inclusive) of 27.8ktpa Cu noting current year 2021 is lowest production forecast of the period at 21.9kt. Excluding the current year, average production is 30ktpa. Production forecasts 2030-2034 (inclusive) is 34ktpa. The increase in production late in the life is driven by grade. LOM AISC of US\$2.68/lb from 2021-2029; US\$2.27/lb from 2030-2034. Total capex budget (development + sustaining) \$19mnpa over LOM.
- **We take a more conservative approach to our modelling** than the Base Case presented in the BDA Technical Review of Capricorn Copper. We escalate both capex and mining/processing costs by 10% from 2026 onwards to reflect greater uncertainty with respect to CC than GG and generally a more challenging, lower-grade ore body.
- We model an end of life closure liability of \$29mn which is a 10% increase on company estimates of \$26mn contained within the BDA Technical Review of Capricorn Copper.

Figure 78: Cap Copper Cu-eq sales (kt) and costs (US\$/lb)

Source: Credit Suisse estimates

Figure 79: Capricorn Copper unit cost composition (US\$/lb)

Source: Credit Suisse estimates

CC Base Case LOM operating estimates

Figure 80: Base Case Production Schedule (extract from BDA Technical Review of Capricorn Copper)

Item	Unit	Calendar Years													Total
		Actual 2018	Actual 2019	Actual 2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	30-34	
Ore Mined	Mt	1.30	1.58	1.85	1.75	1.83	1.81	1.81	1.80	1.82	1.87	1.86	1.83	7.78	24.17
Ore Milled	Mt	1.33	1.61	1.81	1.74	1.84	1.82	1.82	1.81	1.81	1.88	1.86	1.83	7.78	24.19
Cu grade	%	1.70	1.76	1.50	1.51	1.70	1.72	1.70	1.84	1.97	1.90	2.01	2.16	2.04	1.90
Ag grade	g/t	na	na	na	6.48	8.71	10.73	11.10	10.92	11.42	11.30	11.59	12.34	9.6	10.24
Cu contained	kt	22.2	28.3	27.1	26.28	31.2	31.3	30.9	33.2	35.6	35.8	37.3	39.6	158.9	460.1
Ag contained	koz	na	na	na	362.6	514.2	628.1	649.5	634.6	663.6	683.0	691.8	726.5	2405.1	7,959.0
Cu recovery	%	79.3	82.4	82.9	83.2	86.8	86.9	87.1	87.5	86.7	85.9	84.5	83.9	85.6	85.7
Ag recovery	%	na	na	na	70	70	70	71	69	68	70	69	69	63	67.5
Cu in concentrate	kt	17.6	23.3	22.5	21.9	27.1	27.2	26.9	29.1	30.8	30.8	31.5	33.2	136.0	394.5
Ag in concentrate	koz	108	235	249	254	361	443	463	439	454	475	480	499	1507	5,375
Concentrate production	kmdt	81.1	93.5	99.9	84.1	104.2	104.6	103.6	111.8	118.6	143.1	146.4	154.6	632.7	1,704
Cu concentrate grade	%	21.7	24.9	22.5	25.2	26.0	26.0	26.0	26.0	26.0	21.5	21.5	21.5	21.5	22.1
Ag concentrate grade	g/t	42	78	66	91	108	132	139	122	119	103	102	100	74	98
Payable Cu production	kt	16.9	22.4	21.5	21.2	26.1	26.1	25.9	28.0	29.7	29.3	30.0	31.7	129.7	377.6

Note: 2021-2034 based on LOM forecast; Totals are from January 2021 to 2034; na = not available

Source: BDA Technical Review of Capricorn Copper

Production notes:

- Current year 2021 production impacted by a pillar failure in March 2021, which led to the temporary closure of the Mammoth decline, reducing ore availability from Mammoth and Greenstone. Access was re-established with mining recommencing mid-April.

Figure 81: Base Case Capex Profile (extract from BDA Technical Review of Capricorn Copper)

Capital Projects	2021 ASM	2022 ASM	2023 ASM	2024 ASM	2025 ASM	2026 ASM	27-34 ASM	Total ASM
Exploration	2.77	2.00	1.70	1.70	1.70	1.70	3.40	14.97
Mine Development	25.65	17.97	15.58	15.62	19.96	14.09	53.03	161.90
Mine Growth and Sustaining	2.31	2.47	1.29	0.78	2.66	6.06	0.79	16.36
Processing incl. Maintenance	2.98	4.97	3.13	1.89	6.33	5.63	9.92	34.85
Site Support	5.84	0.50	0.20	4.00	0.60	0.20	3.00	14.34
Mine Closure	0.00	0.00	0.00	0.00	0.00	0.00	25.90	25.90
Total	39.56	27.91	21.89	23.99	31.24	27.68	96.04	268.33

Source: BDA Technical Review of Capricorn Copper

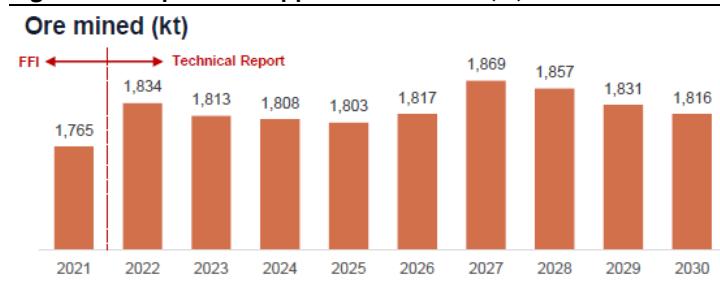
Figure 82: Base Case Operating Costs (extract from BDA Technical Review of Capricorn Copper)

Item	Unit	Calendar Years													
		Actual 2018	Actual 2019	Actual 2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	30-34	Total
Physicals															
Ore Mined	Mt	1.30	1.58	1.85	1.75	1.83	1.81	1.81	1.80	1.82	1.87	1.86	1.83	7.78	24.17
Ore Milled	Mt	1.33	1.61	1.81	1.74	1.84	1.82	1.82	1.81	1.81	1.88	1.86	1.83	7.78	24.19
Payable Cu Productn	kt	16.9	22.4	21.5	21.2	26.1	26.1	25.9	28.0	29.7	29.3	30.0	31.7	129.7	377.6
Payable Cu Productn	Mlbs	37.3	49.3	47.4	46.7	57.4	57.6	57.1	61.6	65.4	64.7	66.2	69.9	285.9	832.5
Site Op Costs															
Mining	A\$M	60.8	70.8	68.8	85.7	90.6	94.1	94.3	92.7	88.9	85.0	84.0	79.8	340.3	1,135.3
Mill	A\$M	33.1	33.0	31.6	33.0	33.4	33.4	32.6	32.5	32.5	32.8	32.7	32.6	156.1	451.6
Maintenance	A\$M	11.6	13.8	13.8	13.9	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	66.1	185.8
Site Serv. Overheads	A\$M	12.4	13.4	16.9	21.5	20.0	19.6	19.5	19.5	19.5	19.6	19.6	19.6	97.9	276.2
Total Site Costs	A\$M	117.9	130.9	127.9	154.0	157.1	160.3	159.6	157.9	154.1	150.6	149.5	145.2	660.4	2,048.8
Other Op Costs															
Corporate Costs	A\$M	18.0	11.7	-0.4	-	-	-	-	-	-	-	-	-	-	
Realisation Costs	A\$M	9.8	28.0	28.6	23.8	32.3	33.1	33.0	36.0	38.3	43.8	44.1	46.7	198.1	529.1
Royalty	A\$M	6.0	8.3	8.9	11.9	13.5	13.0	12.8	13.7	14.5	14.3	14.7	15.5	62.6	186.4
Ag By-product Credit	A\$M	4.4	6.5	7.2	7.5	9.6	12.0	12.6	12.2	12.6	13.2	13.3	13.9	41.1	147.9
Total Op Costs	A\$M	147.4	172.5	157.8	182.2	193.5	194.4	192.7	195.4	194.3	195.5	193.5	193.5	880.0	2,616.5
Unit Costs															
Mining	A\$/t mined	46.7	44.7	36.2	48.8	49.4	51.9	52.2	51.4	48.9	45.4	45.2	43.6	43.7	47.0
Milling (incl Mtce)	A\$/t milled	33.7	29.1	24.7	26.9	25.4	25.6	25.2	25.3	25.3	24.5	24.7	25.0	28.5	26.4
Site Services	A\$/t milled	9.4	8.3	9.3	12.3	10.9	10.8	10.7	10.8	10.8	10.4	10.5	10.7	12.6	11.4
Total Site Costs	A\$/t milled	88.9	81.6	70.0	88.5	85.6	88.0	87.7	87.4	85.3	80.1	80.5	79.3	84.9	84.7
C1 Cash Costs	A\$/lb Cu	3.31	3.12	3.16	3.65	3.13	3.15	3.15	2.95	2.75	2.80	2.73	2.55	2.86	2.92
C1 Cash Costs	US\$/lb Cu	2.32	2.17	2.19	2.81	2.29	2.30	2.30	2.15	2.01	2.04	1.99	1.86	2.09	2.13
AISC Costs	US\$/lb Cu	na	2.73	2.83	3.63	2.79	2.73	2.76	2.68	2.47	2.44	2.40	2.24	2.27	2.51

Note: 2021-2034 based on LOM forecast; Totals are from 2021 to 2034; Corp Costs (Actuals) include some inventory and accounting adjustments, particularly in 2020; AISC = All In Sustaining Costs; from 2021 Corporate Costs have been transferred from site costs to a corporate account

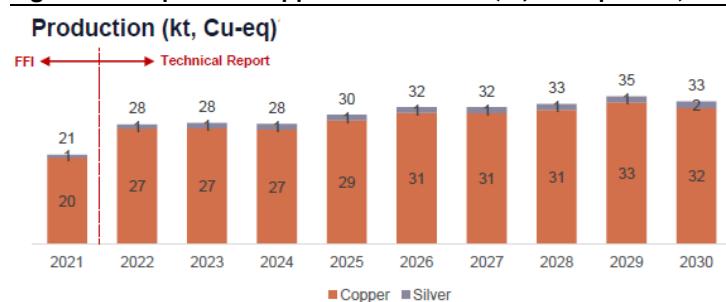
Source: BDA Technical Review of Capricorn Copper

Figure 83: Capricorn Copper – Ore mined (kt)



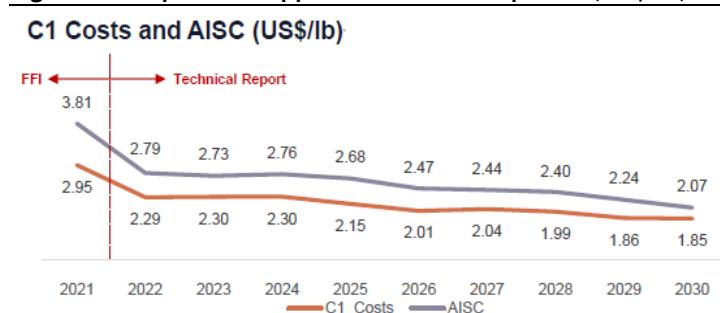
Source: 29Metals (2021), BDA Technical Review of Capricorn Copper (2022+)

Figure 84: Capricorn Copper – Production (kt, Cu-eq. basis)



Source: 29Metals (2021), BDA Technical Review of Capricorn Copper (2022+)

Figure 85: Capricorn Copper – C1 and ASIC profile (US\$/lb)



Source: 29Metals (2021), BDA Technical Review of Capricorn Copper (2022+)

Figure 86: Capricorn Copper – Capex profile (A\$mn)



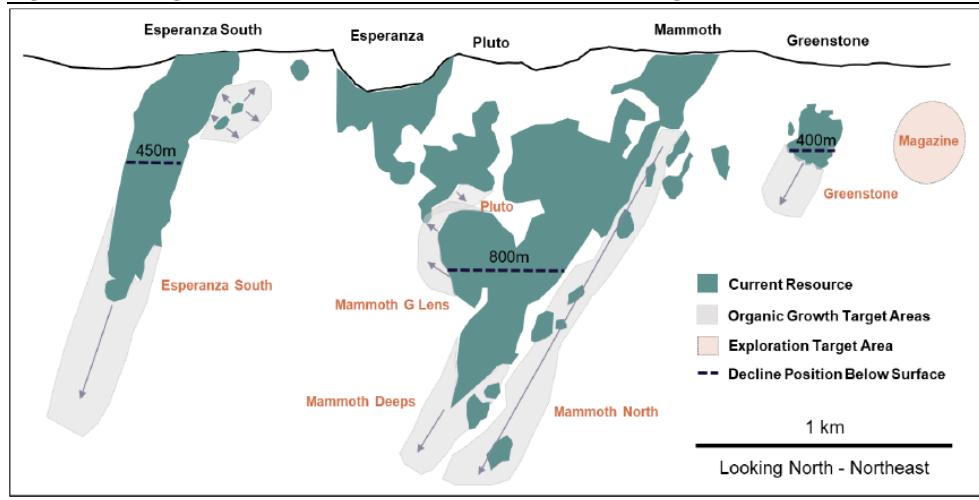
Source: 29Metals (2021), BDA Technical Review of Capricorn Copper (2022+)

Exploration

A range of near mine exploration opportunities are identified by 29Metals for resource extensions to current orebodies (Figure 87). These potential extensions would lie outside the current Resource shell and mine planning, offering mine life extensions and production optimisation benefits. The targets include:

- **Greenstone:** Existing Resource 2.1Mt @ 1.8% Cu, 77ppm Co. Active mining area with resource open at depth providing extension potential. 2km of resource conversion drilling planned for 2021.
- **Mammoth Deep:** Existing Resource 6.9Mt @ 1.9% Cu. Resource open at depth and potentially along strike providing resource extension potential. 4.3km of resource conversion drilling planned for 2021.
- **Esperanza South:** Existing Resource 16.9Mt @ 1.7% Cu, 645ppm Co, 16g/t Ag. Active mining area with resource open at depth (down plunge) and widening at depth providing extension potential. 5.6km of resource conversion drilling planned for 2021.
- **Pluto:** Existing Resource 3.2Mt @ 2.1% Cu. approximately 400m from Mammoth with Resource partially open along strike providing extension potential.
- **Mammoth North:** Inferred resource 1.6Mt @ 1.26% Cu. Resource open at depth and potentially along strike providing resource extension potential. Targeting the intersection of Mammoth Extended and Portal faults where there have been high grade drill intercepts. There is a 1.4km down plunge zone to test. 2.5km of resource extension drilling is planned for 2021, following up historic drilling at a spacing suitable to support a mineral resource.

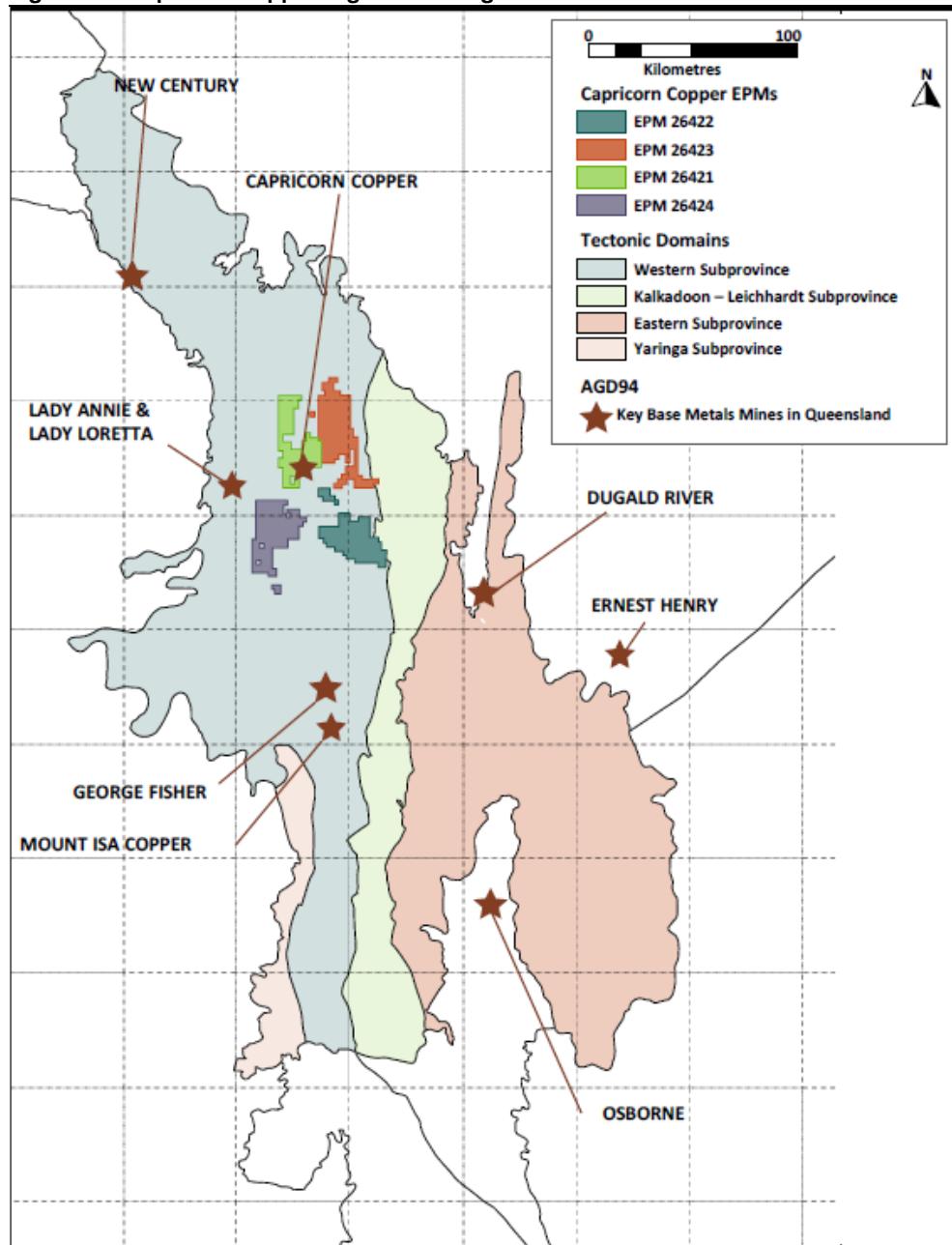
Figure 87: Long section: Capricorn in-mine and near-mine growth opportunities



Source: 29Metals

Regional Exploration

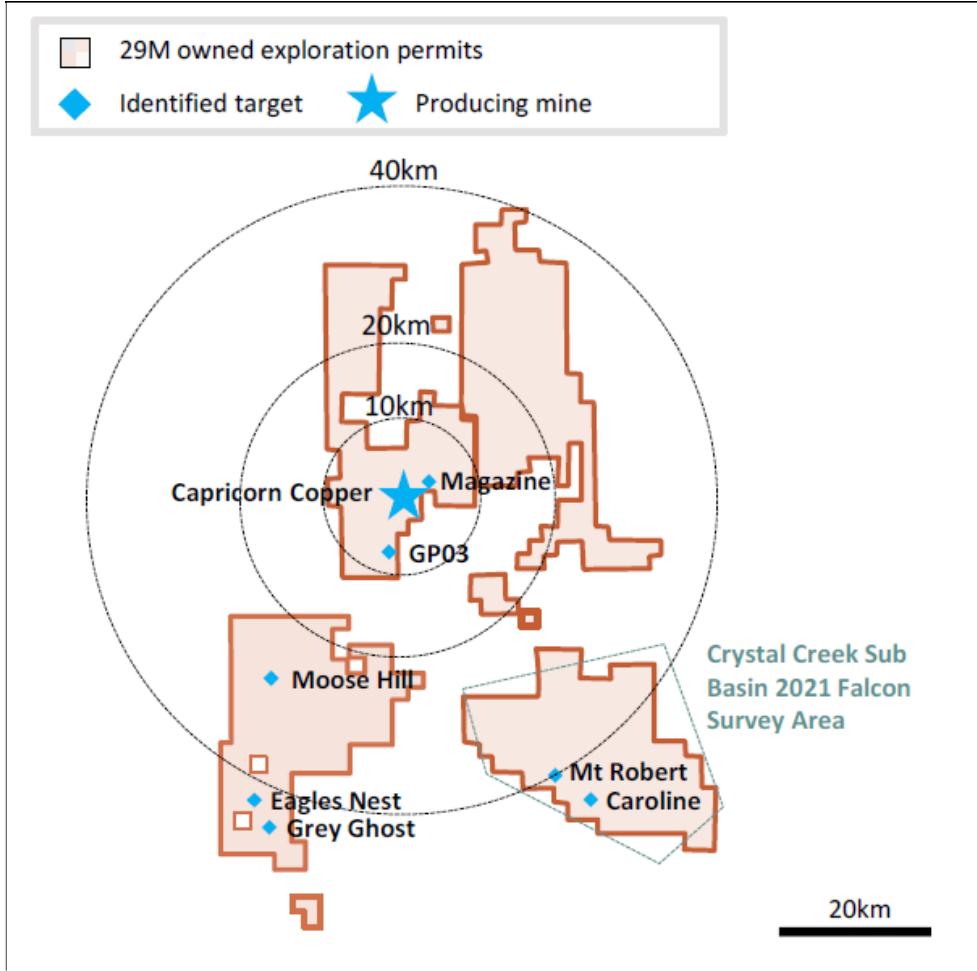
- **Capricorn Copper also holds 1,858 square kilometers of mining and exploration leases available for exploration** within the western Fold Belt of the Mount Isa Inlier. This region hosts the Mount Isa, Lady Annie, Mount Oxide, Lady Loretta and Century mines.
- Capricorn Copper existing mines comprise structurally controlled copper mineralisation, with some similarities to other known deposits Mt Oxide and Lady Annie.
- **The region is also prospective for Sediment-hosted lead, zinc and silver mines** with examples being Mount Isa, George Fisher-Hilton, and Lady Loretta, and also Stratabound copper such as Mt Watson and Walford Creek.

Figure 88: Capricorn copper regional setting

Source: 29Metals

Exploration Targets

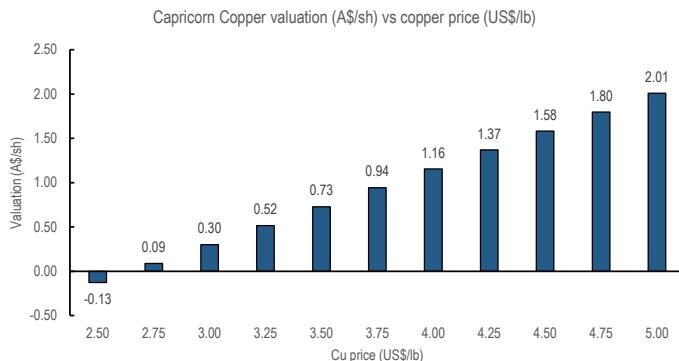
- 29Metals has identified seven drill-ready targets based on soil anomalies and historic drilling – six for copper and one for lead-zinc (Figure 89). It also has another lead-zinc prospect at Crystal Creek sub basin needing follow-up work with a pair of targets already identified.

Figure 89: Capricorn Copper Key regional exploration targets

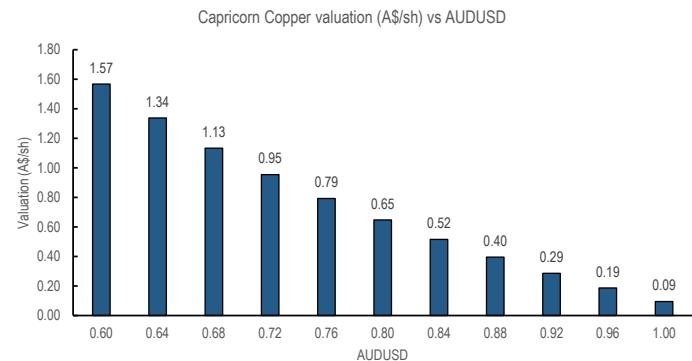
Source: 29Metals

Valuation

- Base case value (Capricorn Copper).** Our base case valuation is A\$0.83/sh, forming 31% of our group \$2.70 DCF. Our valuation is NPV-driven and uses an 8% (real) WACC as well as our CS house commodity price forecasts.
- Spot commodity/FX value (Capricorn Copper) \$1.50/sh.

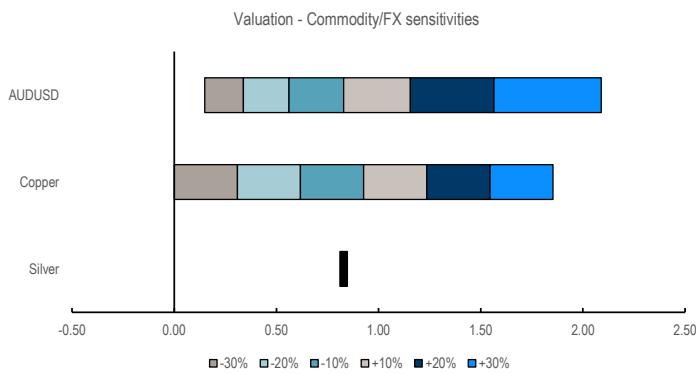
Figure 90: Capricorn Copper valuation sensitivity – Copper

Source: Credit Suisse estimates

Figure 91: Capricorn Copper valuation sensitivity - AUDUSD

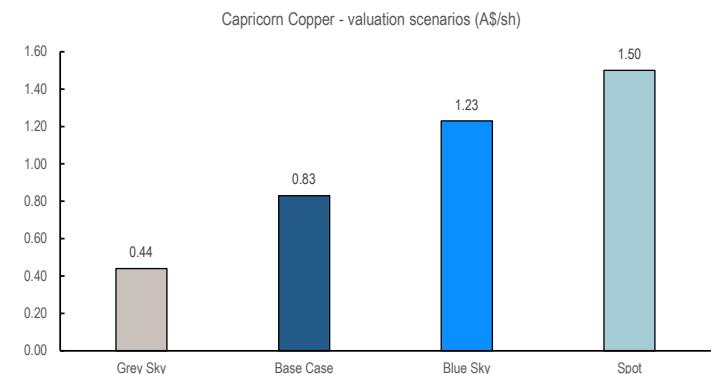
Source: Credit Suisse estimates

Figure 92: Capricorn Copper valuation commodity/FX sensitivity (A\$/sh)



Source: Credit Suisse estimates. n.b. AUDUSD is reversed

Figure 93: Capricorn Copper valuation range scenarios



Source: Credit Suisse estimates

Redhill – Asset review

Overview

Redhill is an exploration area of 227 square kilometers that 29M holds in southern Chile, 110km southwest of the regional capital city of Punta Arenas. Redhill lies on the eastern shore of a Fjord – the Canal Jeronimo. Access to Redhill from Punta Arenas is 120km by road to the settlement of Lina and then 50km by boat.

The project area hosts a historic underground mine at Cutters Cove, which produced 212kt or ore grading 1.72% Cu from quartz-sulphide veins in the period 1971-75. There are also six other identified areas of mineralisation.

EMR acquired the exploration area in 2012 and has subsequently invested \$14mn in exploration including a geophysical survey and three drill programs totaling 27 holes. It established an inferred mineral resource at Cutters Cove of 4.3Mt @ 1.9% Cu-eq, with potential to be expanded. There are no known technical, regulatory or social barriers to the future development of a mine and processing plant.

Exploration

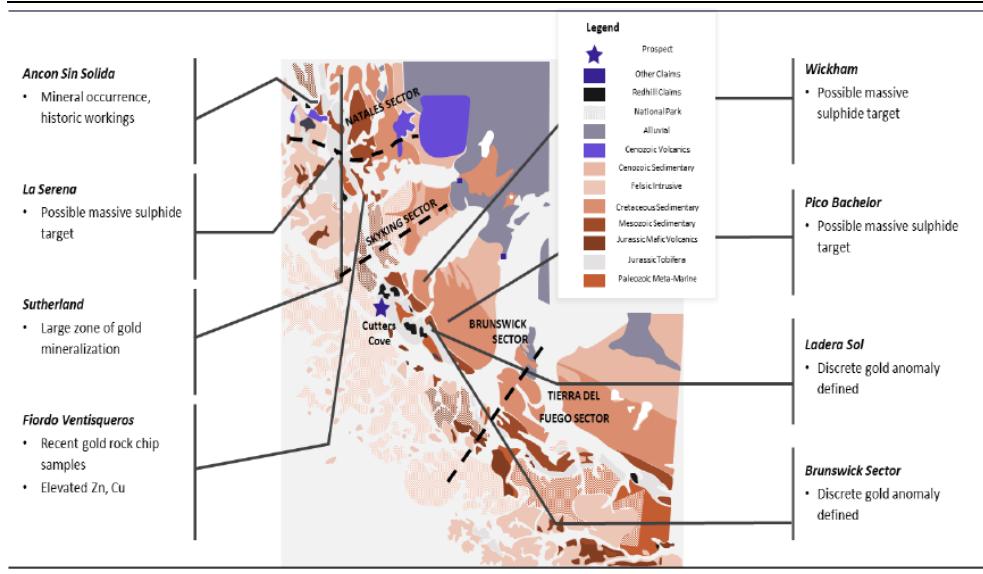
29Metals strategy is to continue to test the regional prospectivity of the tenement landholding to identify potential for additional economic mineralisation. 29Metals considers the area is prospective for mesothermal polymetallic quartz-sulphide veins ("Cutters style"), VHMS, orogenic and epithermal gold deposits. It should be noted that the region is far to the south of, and not within the main copper belt within Chile. 29Metals does not seek to locate a large porphyry copper deposit which comprises the majority of Chile's copper endowment.

The tenement package comprises 70 exploration concessions outside the Cutters area covering an area of 195km². Limited historical reconnaissance identified 48 targets on the basis of mineral occurrences, visual anomalies and prospective geology.

EMR completed two subsequent regional exploration programs in 2015 and 2017 to advance a number of the targets. The prospects remain early stage and it is not possible to assume any would become commercial targets.

29Metals notes that Redhill targets are the end of the queue as regards to exploration targets.

The area appears extremely remote and difficult to access. We believe an orebody would have to be large and high value to justify development. The current Cutters Cove resource looks small and probably unsuitable as even the first building block of a mine development. 29M has noted that Redhill is its lowest priority drill target.

Figure 94: Redhill regional exploration targets

Source: 29Metals

Valuation

The Cutters Cove resource with an inferred metal content of 82kt of copper equivalent appears too small to support a mining project, in this remote location. As such it has no value as it stands. We understand 29Metals is seeking a target with 10-20Mt of resource. We understand Cutters Cove veins remain open along strike and down plunge, but have no knowledge of whether there is the possibility of such a resource from Cutter Cove.

It may be regarded as a long-term interesting target, or a distraction, depending on one's perspective. We assign value of \$0.02/sh to Redhill based on a \$12mn book value.

Financials

Below are the pro forma historic financial results as well as 29Metals' 2021 estimates and CS's 2021-2025 estimates. Differences between 29M and CS forecasts are owing to modestly different commodity/FX assumptions applied.

Profit and Loss

Figure 95: Pro forma income statement and 2021 forecasts

P&L (A\$mn)	2018	2019	2020	29M 2021e	CS 2021e	CS 2022e	CS 2023e	CS 2024e	CS 2025e
Golden Grove Revenue	402	473	434	433	433	444	454	484	622
Capricorn Copper Revenue	123	184	191	232	232	254	232	236	284
Total revenues	525	657	625	665	665	698	686	720	905
Total operating expenses	(344)	(402)	(449)	(444)	(460)	(487)	(494)	(529)	(555)
EBITDA	181	255	176	221	206	212	191	191	350
D&A	(100)	(115)	(132)	(126)	(126)	(124)	(133)	(143)	(169)
EBIT	81	140	44	95	79	88	59	48	181
Net finance charges	(19)	(14)	(21)	(12)	(12)	(13)	(11)	(10)	(10)
FX/Derivatives	(29)	(10)	23	(34)	(18)	5	9	0	0
Profit before tax	33	117	46	49	50	79	57	39	171
Tax	(15)	(35)	(13)	(13)	(13)	(22)	(16)	(11)	(47)
NPAT	18	82	33	37	37	57	41	28	124
Profitability ratios									
EBITDA Margin	34%	39%	28%	33%	31%	30%	28%	27%	39%
EBIT Margin	15%	21%	7%	14%	12%	13%	9%	7%	20%
NPAT Margin	3%	12%	5%	5%	6%	8%	6%	4%	14%

Source: Company data, Credit Suisse estimates

Figure 96: Revenue composition by metal and 2021 forecasts

Revenue profile (A\$mn)	2018	2019	2020	29M 2021e	CS 2021e	CS 2022e	CS 2023e	CS 2024e	CS 2025e
Revenue by metal									
Copper	258	347	353	423	422	434	436	493	549
% Total	46%	49%	50%	59%	58%	56%	56%	60%	53%
Gold	71	121	154	76	87	93	64	55	72
% Total	13%	17%	22%	11%	12%	12%	8%	7%	7%
Zinc	177	191	141	169	165	198	246	242	363
% Total	32%	27%	20%	23%	23%	26%	31%	29%	35%
Silver	34	44	47	48	48	38	30	28	35
% Total	6%	6%	7%	7%	7%	5%	4%	3%	3%
Lead	19	8	3	9	9	8	8	9	10
% Total	3%	1%	0%	1%	1%	1%	1%	1%	1%
Un-realised QP gain/(loss)	(3)	1	4	(2)	0	0	0	0	0
Gross Revenue	556	713	703	723	730	772	784	827	1,029
TC/RCs	(31)	(55)	(78)	(58)	(66)	(73)	(98)	(107)	(124)
Net Revenue	525	657	625	665	664	698	686	720	905
Revenue by operation									
Golden Grove	426	514	499	482	485	504	533	570	726
% Total	77%	72%	71%	67%	66%	65%	68%	69%	71%
Capricorn Copper	132	197	200	243	245	268	251	258	302
% Total	24%	28%	28%	34%	34%	35%	32%	31%	29%

Source: Company data, Credit Suisse estimates

■ Revenue.

- Copper comprised 46-50% of revenue over 2018-2020.
- **Copper's revenue contribution should increase on a go-forward basis** on combination of: Increasing Cu production profile at GG / CC, reduction in gold

production at GG from 2019-2020, and increased Cu pricing, noting the average Cu price over the period was ~US\$2.85/lb vs spot ~US\$4.32/lb.

■ EBITDA and margin.

- **Historical EBITDA margins 28-39%** over 2018-2020 was achieved across periods of variable operating performance, generally with lower production and higher cost than the base case mine life operating projections, and at lower realised metal pricing across its commodity suite than are currently prevailing with the exception of gold.

Figure 97: Segment EBITDA and 2021 forecasts

Segment EBITDA (A\$mn)	2018	2019	2020	29M 2021e	CS 2021e	CS 2022e	CS 2023e	CS 2024e	CS 2025e
Golden Grove	206	246	160	170	153	157	167	162	274
% Margin	51%	52%	37%	39%	35%	35%	37%	33%	44%
% Group	103%	90%	82%	71%	68%	68%	77%	75%	73%
Capricorn Copper	(6)	28	35	70	71	74	49	53	100
% Margin	-5%	15%	19%	30%	31%	29%	21%	23%	35%
% Group	-3%	10%	18%	29%	32%	32%	23%	25%	27%
Segment EBITDA (Pre corp/other)	200	274	196	241	224	232	216	215	374
% Margin	38%	42%	31%	36%	34%	33%	32%	30%	41%
Corporate/Other	(19)	(19)	(19)	(20)	(18)	(20)	(25)	(24)	(24)
Group EBITDA	181	255	176	221	206	212	191	191	350
% Margin	34%	39%	28%	33%	31%	30%	28%	27%	39%

Source: Company data, Credit Suisse estimates

■ Golden Grove has consistently generated stronger margins than Capricorn

Copper, albeit that was through a turnaround period for Capricorn Copper. Subject to mine plan execution and metal pricing, we expect go-forward margins are likely to be less disparate, although GG margins should remain superior owing to benefits from greater by-product cost offsets.

■ Other.

Stamp duty is payable on Golden Grove at rate of 5.15% on consideration paid for dutiable property (value yet to be determined). No duty will be payable on Capricorn Copper based on government exemption.

■ Depreciation and amortisation.

Applicable stamp duty costs payable on Golden Grove will be amortised. Depreciation is calculated on a units of production or on a straight line basis over each asset's useful life. Amortisation relates to right of use and mine properties assets and is also on a units of production basis. Capricorn copper is carried at A\$233mn which will be subject to depreciation over its remaining life. Golden Grove tax cost base is subject to future revaluation. Golden Grove depreciation is on a 20% reducing balance schedule.

■ Corporate overheads.

\$20mn pa (which we also apply as go-forward rate).

■ Funding structure / interest.

Funding cost Libor + 3.5% on Term Debt of US\$150mn that is planned to be retained. Implies A\$10mnpa interest expense.

■ Tax.

Corporate tax rate 30%. Carried forward tax loss of \$147mn which can be utilised at an available fraction rate of 8% pa (i.e. 8% of annual PBT can attract nil tax subject to remaining carried forward tax loss). We assume effective 27.6% payable tax rate to 2032 when we estimate tax losses are fully consumed, then 30% thereafter.

■ Earnings sensitivities.

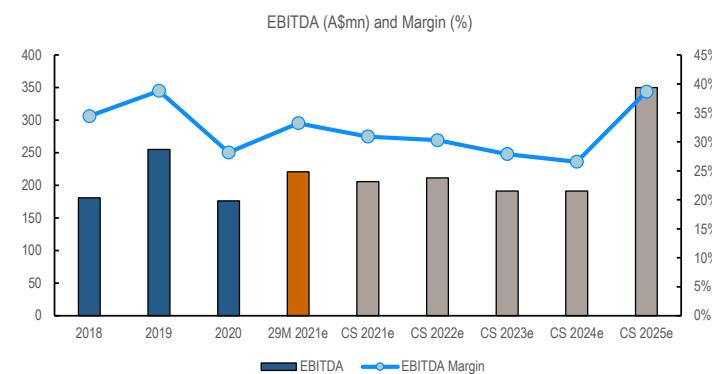
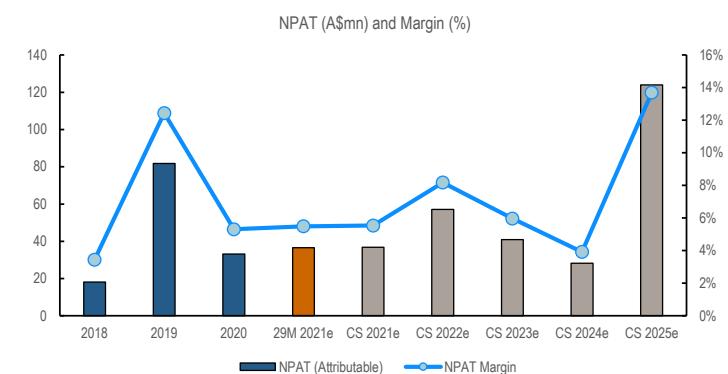
Figure 98 shows 29M generated earnings sensitivities to CY2021 based on a +/- 10% change in: Copper price; Other metal prices; Production; and Operating Costs. Results indicate the greatest sensitivity is to production.

Figure 98: 29M sensitivity analysis on CY2021 NPAT and EBITDA

\$000	Increase/ Decrease	FY2021 Pro forma profit after tax	FY2021 Pro Forma EBITDA
Change in USD copper price	+/- 10%	9.9 / (9.9)	31.9 / (31.9)
Change in USD non copper metal prices	+/- 10%	6.1 / (6.1)	22.0 / (22.0)
USD/AUD exchange rate	+/- 5%	(15.7) / 17.4	(24.6) / 27.2
Production volumes	+/- 10%	35.1 / (35.1)	53.7 / (53.7)
Cost of sales	+/- 10%	(23.2) / 23.2	(33.1) / 33.1

Source: 29Metals

NB sensitivity outcome applied to 9 months 1 April to 31 December post 1Q actuals

Figure 99: EBITDA and margin**Figure 100: NPAT and margin**

Source: 29Metals (2018-2020, 29M 2021e), Credit Suisse estimates

Source: 29Metals (2018-2020, 29M 2021e), Credit Suisse estimates

Cash flow

Figure 101: Cash flow statement and forecasts

Cash flow (A\$mn)	2018	2019	2020	29M 2021e	CS 2021e	CS 2022e	CS 2023e	CS 2024e	CS 2025e
Operating cash flow	195	188	152	146	142	190	180	181	320
Investing cash flow	(78)	(94)	(107)	(114)	(111)	(96)	(146)	(136)	(115)
Financing cash flow	(143)	(61)	(68)	(72)	21	(82)	(49)	(30)	(93)
Net change in cash	(26)	33	(23)	(39)	53	12	(15)	15	112
Free cash flow	116	94	45	-	32	94	34	45	205
OCF/EBITDA Conversion	108%	74%	86%	66%	69%	90%	94%	95%	91%

Source: Company data, Credit Suisse estimates

- **Operating Cash Flow conversion:** Normalised conversion to EBITDA looks to be >80%. Periods with conversion < 80% both featured heavy working capital utilisation.

- **OpCF conversion** is aided by trade receivable terms for 90% of contained metal payable being received during the month of shipment, with remaining 10% settling three months after shipment. 2021F payable terms are 45 days at Golden Grove and 75 days at Capricorn Copper. The tax payable is below the full corporate rate due to the tax-loss offset and accelerated D&A, which also supports conversion. We assume sustainable conversion of 85-90%.

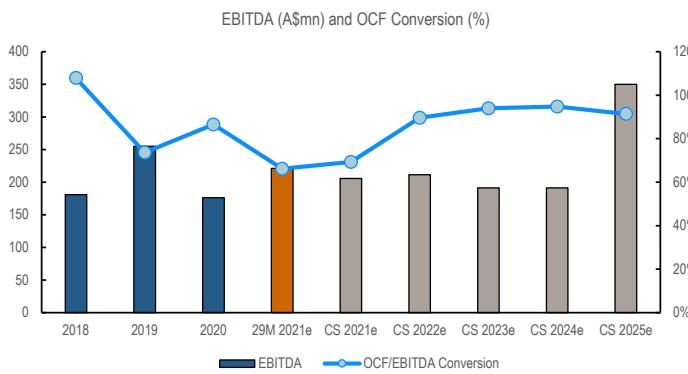
- **Net Investing cash flow.** Base case (and Gossan Valley Consolidated Case) capex budget is detailed in BDA Technical Review of Golden Grove, by item, for the period 2021-2034.

- **Golden Grove 2021e total capex is \$66mn**; Gossan Valley Consolidated Case (BDA Technical Review of Golden Grove) 2021-2036 LOM capex was set at \$48mn pa, with the greatest capex intensity 2023-26 (\$96mn pa) on mine development.
- **Capricorn Copper 2021e total capex is \$40mn**; Base Case (BDA Technical Review of Capricorn Copper) 2021-2034 LOM capex \$19mn pa with greatest capital intensity 2021-2026 at \$29mn pa.
- **We take a more conservative approach in our capex modelling** to the profiles presented in the BDA technical reviews of Golden Grove and Capricorn Copper to account for capex overruns, unforeseen work requirements, potential material and labour inflation, and estimation risk.

We observe the mine plans presented in the BDA Technical Reviews assume marked reduction in capex intensity in the latter portion of each operations mine life. Whilst we acknowledge declining development and expansion investment is likely as mine life nears conclusion, the extended time frame also increases risk of estimates, including currently unforeseen demands on capex. We address this via applying a 10% capex escalation to the capex estimates beyond 2026 (inclusive) presented in the BDA Technical Reviews.

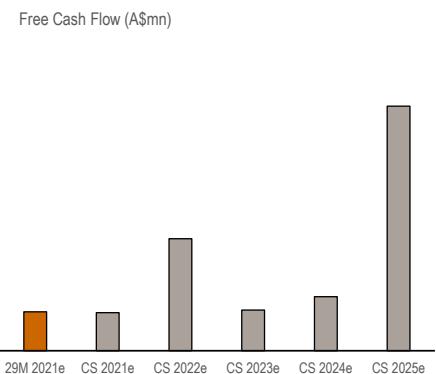
- **Free cash flow.** 2021e FCF: \$32mn (CS estimate) imply a modest FCF Yield of 2.8%. This reflects 2021e as a transition year of operations. Growth in FCF is likely due to production increases and cost efficiencies across both assets.
- **Credit Suisse sustainable FCF.** Whilst we model in detail earnings and CF outlook based on our mine planning and corporate assumptions, as an alternative sense check, we offer a simple approach to FCF generation capability being: Annual EBITDA ~\$200mn, applying 85% conversion, less \$85mn pa Net Investing CF generates conceptual FCF \$~85mn pa FCF on a go-forward basis (subject to variabilities in production, costs, capex, metal prices).
- This scenario increases FCF Yield range to 7.5%. A scenario of applying spot commodity/FX prices increases FCF Yield further to 17%.

Figure 102: EBITDA and OpCF conversion



Source: 29Metals (2018-2020, 29M 2021e), Credit Suisse estimates

Figure 103: Free Cash Flow profile



Source: 29Metals (2018-2020, 29M 2021e), Credit Suisse estimates

Balance sheet

Figure 104: Pro forma Dec-20 Balance sheet and CS forecasts

Balance Sheet (A\$mn)	2020	CS 2021e	CS 2022e	CS 2023e	CS 2024e	CS 2025e
Cash and equivalents	150	203	215	200	216	327
Trade and other receivables	33	47	42	43	47	57
Inventories	41	46	38	39	43	44
Income tax receivable	0	0	0	0	0	0
Other current assets	7	7	7	7	7	7
Current assets	232	304	303	289	314	435
Investments	0	0	0	0	0	0
Receivables	0	0	0	0	0	0
Exploration assets	26	36	46	51	54	58
PP&E (Including ROU asset)	875	849	811	814	800	738
Intangibles	0	0	0	0	0	0
Other non-current assets	124	124	124	124	124	124
Non-current assets	1,024	1,008	980	989	978	920
Total assets	1,257	1,312	1,283	1,278	1,292	1,356
Trade and other payables	78	34	35	35	40	40
Lease liabilities	29	6	2	1	0	0
Borrowings	10	10	10	10	10	10
Income tax payable	4	13	9	6	5	24
Provisions	10	10	10	10	10	10
Other current liabilities	44	64	49	42	43	46
Current liabilities	175	138	114	104	108	129
Payables	0	0	0	0	0	0
Lease liabilities	17	8	2	1	0	0
Borrowings	192	166	146	126	126	126
Deferred tax liabilities	60	60	60	60	60	60
Provisions	96	96	96	96	96	96
Other liabilities	0	0	0	0	0	0
Non-current liabilities	364	329	304	282	282	281
Total liabilities	539	467	418	386	389	411
Net assets	717	846	865	893	903	945
Issued capital	453	544	544	544	544	544
Reserves	(1)	(1)	(1)	(1)	(1)	(1)
Retained profits	265	302	322	349	359	401
Total Equity	717	846	865	893	903	945

Source: 29Metals (29M 2020e), Credit Suisse estimates

Figure 105: Pro forma cash / debt structure

Cash / debt structure (A\$mn)	Pro forma 31-Dec 2020
Term loan (syndicated facility)	201.7
Lease liabilities	44.3
Derivative financials liabilities	22.1
Other	0.5
Total debt	268.6
Cash and equivalents	131.2
Derivative financial assets	8.9
Net debt/(cash)	128.5
Net debt (excluding leases)	84.2
ND/EBITDA	0.41x

Source: 29Metals

Company forecast pro forma balance sheet composition looks adequately capitalised

with Net Debt / EBITDA Leverage 0.41x (CS 2021e EBITDA). We note 29M's production growth profile suggests increased future EBITDA which would see leverage decline below that level, all-else-equal. Liquidity appears sound, supported by positive FCF outlook, cash of ~A\$186m.

- **Cash.** Cash and equivalents balance at the June quarterly result was A\$186mn.
- **Debt.** Company forecast gross drawn debt is US\$150mn (A\$194mn), interest at Libor + 3.5%). Amortising repayment structure with a bullet, maturing September 2025. Debt facilities also to include undrawn US\$20mn Revolving Credit Facility. 29M's intention is to restructure debt facility to further support liquidity outlook to protect against metal price volatility.
- **Hedging.** Pro forma net derivative liability A\$13.3mn comprised of A\$8.9mn derivative assets (gold swaps contracts) and A\$22.1mn derivative liabilities (copper forward contracts). Commodity hedges are not designated for hedge accounting and so are reported at fair value, with any realised/unrealised gain included in the P&L below the gross profit line.
29Metals has cash settled the 2021 copper hedges and has indicated they intend to opportunistically settle 2022 copper hedges using cash generated from operations. Remaining hedges are in a \$8mn loss position using CS price assumptions or \$19m loss position on spot.
- **Provisions.** Pro forma \$97.5mn rehabilitation provision, split 67% Golden Grove (\$65mn) and 33% Capricorn Copper (\$33mn). Provision reflects a DCF of estimated future cost of rehabilitation and restoration of mining operation sites factoring WA and QLD provision determinations. Discount rate applied is 3%.

Capital management

- **Capital management.** No formal policy is in place, and Directors have stated there is no intention to pay a dividend in 2021. However, they signaled the appetite to become a future dividend payer with the company to "consider paying dividends when appropriate, having regard to sustaining its operations, achieving its growth objectives and preserving a strong balance sheet position".
- **We assume 40% FCF payout,** commencing 2022. A level we determine to preserve ample liquidity whilst building sufficient cash towards its debt repayment obligation (US\$150mn due Sep-25, albeit refinance also an option supporting a higher potential pay out).
- **Franking.** Pro forma franking credits not disclosed. Franking should build with expectation of tax payable from current year (We forecast ~28% effective tax payable rate < statutory income tax rate 30%).

Key Risks

Figure 106: Risk Register

Risk	Comments
Capital cost	<ul style="list-style-type: none"> ■ The estimates included in the mine plan (and our modelling) are based on quotes and historical costs. The majority of capital in our modelling relates to mine development for which the cost estimates are based on unit prices defined by the mine contractor. ■ At the company's primary cash generating asset, Golden Grove, capital costs represent ~40% of mine cash flow, meaning a 10% capital cost overrun would equate to only a 4% reduction in FCF.
Operating cost	<ul style="list-style-type: none"> ■ The estimates included in the mine plan are based on current agreements with contractor Byrnecut, which run to September 2022 and have recently been extended. Recently we have seen elevated levels of turnover in the industry which could put labour costs, and thus production costs, at risk. Additionally, if production is not maintained at target levels then unit costs would likely suffer due to fixed components of operating costs. ■ At Golden Grove, the company's primary operation, high production costs are offset by strong by-product credits (BPC) from zinc/gold/silver. As a result, net unit costs are highly sensitive to changes in production costs. The BDA technical report Base Case Golden Grove forecasts include A\$5.21b in by-product credits which offset A\$5.55b in other operating costs for a net of A\$335m. On these forecasts, a 1% change in operating costs before BPC is amplified to an 18% change in net production costs.
Ore Reserves quantity/grade realisation	<ul style="list-style-type: none"> ■ Ore reserves are estimates and could be above or below the true metal content. We note that contained copper/zinc reconciliation has been favourable (+5%) over the 2017-2020 period. ■ However, at CC the grade of concentrate and recoveries are below the target due to complex mineralogy in different mining domains. The risk around realizing metal quantity and quality is apparent, although the product remains saleable and the recovery underperformance is not catastrophic to date.
Permitting/Licensing	<ul style="list-style-type: none"> ■ While 29Metals' two operations are in Australian states favourable to mining, there is always a risk that permits or licences could be delayed or refused, particularly if they concern safety or environmental aspects. Without necessary permits, 29Metals would be unable to continue production and would have no sources of revenue. ■ 29M requires some tailings EAs relatively promptly at Capricorn Copper, with both safety and environmental overlays. ■ Capricorn Copper needs to transition tailings deposition from the EPit which is approaching its maximum permitted levels to ETSF for a year while it undertakes a tailings raise at EPit. In March, Capricorn applied for an EA to undertake a 3m tailings lift at ETSF, which was approved in July. It now requires approvals to increase the capacity at EPit.
Geotechnical risk	<ul style="list-style-type: none"> ■ Golden Grove mining is becoming deep at over 1km below surface in some sections. Seismic events are a growing risk although so far, dedicated monitoring has allowed quick rectification of any impacts. ■ Capricorn Copper has elevated mining risks. A pillar failure at the Mammoth Remnants project in March 2021 in which 150kt collapsed into a mining void and caused air flow and dust up the decline and into lower workings. The Mammoth decline was temporarily closed and mining suspended at Mammoth and Greenstone while Mines Department investigations were underway. Operations at Greenstone and Mammoth Deeps recommenced in April, but the mining at Mammoth Remnants remains on hold while the planned mining sequence is reviewed ■ Esperanza South at CC has begun mining with sub-level caving which requires cave progression to the surface. We have no reason to assume it will fail, but is yet to be achieved and therefore represents a risk.
Weather risk	<ul style="list-style-type: none"> ■ 29Metals operations may be impacted by severe weather, with heavy rainfall and flooding the most apparent risk. In the event of flooding, particularly in the CC operations transport links may be interrupted given the access road is unsealed. This may interrupt concentrate shipments, or supplies of critical supplies.
Equipment risk	<ul style="list-style-type: none"> ■ 29Metals processing plants are elderly units that had seen little maintenance when they were purchased. EMR undertook rehabilitation of the mills when restarting, but outages are still a risk as seen in MarQ21 at CC. While breakdowns such as the failure of the CC mill gearbox so far have been rapidly fixed, more serious failures are possible that might lead to extended outages. The same applies for substantial mine infrastructure, such as Underground ventilation fans, or shaft hoist at Scuddles, which is now under government prohibition after an unplanned movement of the skip in late-2020. Approval to recommence use of the shaft is not expected until July 2021.

Transport/Infrastructure risk	<ul style="list-style-type: none"> ■ 29Metals transport and infrastructure requirements are low, but concentrate from both mines is trucked to port or railway sidings and supplies trucked in. There may be delays if the roads were blocked. ■ Both mines are connected to electricity grid via transmission lines. Electricity supply outages are possible. GG has back-up diesel generators to maintain critical services in the event of an outage.
Contractor risk	<ul style="list-style-type: none"> ■ 29Metals relies on third-party contractors to provide mining services at its operations, but has limited contractual recourse for under-performance. In the event of a dispute that led to termination of the contract, the loss of the mining personnel may remove local knowledge of mining conditions that may slow rebuilding of smooth operations in a replacement contractor. ■ There is also the risk that the contractor may not be able to access all the skill personnel needed in periods – like now – with high commodity prices, closed borders and risks of restrictions limiting interstate travel.
Exploration risk	<ul style="list-style-type: none"> ■ 29Metals mining operations assume on-going exploration success in extending current resources beyond the 9-10 years provided for by reserves. There is no certainty that resources will be extended or that mineralisation will be mineable or provide adequate recovery in the plant. However, both GG and CC are mature operations where there is a high level of knowledge about the characteristics and geometry of mineralisation.
Environmental risk	<ul style="list-style-type: none"> ■ Any failure of one the tailings storage facilities could have a serious impact on 29Metals reputation, and severe environmental remediation costs together with lengthy mine suspensions could endanger 29Metals viability as a going concern. ■ CC received an Environmental Protection Order from the QLD regulators in Sep 2020 requiring it to lower water levels in various facilities to avoid an uncontrolled release in the event of heavy monsoonal rains before Nov 2022. CC has reduced water levels, but water levels in one tailings facility remain higher than mandated. While there is considerable time available to meet the target, it is conceivable that CC cannot meet the targets, opening it to penalties.
Rehabilitation risk	<ul style="list-style-type: none"> ■ 29Metals has bought mature mining operations and taken on considerable rehabilitation liabilities. 29Metals has accounted for the estimated costs as provisions, but given the uncertainty, the actual costs may be greater. The rehabilitation risk is many years away as the mines are continuing operations.
Commodity risk	<ul style="list-style-type: none"> ■ Commodity prices are always volatile and there can be no certainty that prices may not fall below costs of some operations. Golden Grove is somewhat shielded by diversification, having exposure to several commodities and high by-products lowering its cash cost base. Capricorn Copper is a relatively high cost producer so is exposed to copper prices.
FX Risk	<ul style="list-style-type: none"> ■ With operations in Australia and products sold in USD, 29Metals cashflows are heavily impacted by the AUD/USD rate. If the AUD appreciated rapidly against the USD, it would erode the AUD cashflow for the operations, which could have a serious impact on a high cost mine like CC.
Financial risk	<ul style="list-style-type: none"> ■ Gross failure to meet financial targets (due to another of the risks in this list) might see 29Metals net debt rise to risky levels, breach covenants and lose access to debt facilities. This could wipe out equity ownership.
Hedging	<ul style="list-style-type: none"> ■ 29Metals has some hedging in place for 2021 and 2022, as required by lenders, but intends to use up to \$40mn to close out 2021 hedges. Future hedging will be avoided to provide investors with price exposure and only undertake hedging as required by creditors.
Key customer risk	<ul style="list-style-type: none"> ■ 29Metals sells its products to Trafigura, Korea Zinc and Mt Isa (for high arsenic product – CC only). It is likely that other customers could be readily located if the Key customers refused product of normal quality.
Key personnel risks	<ul style="list-style-type: none"> ■ 29Metals has key technical and management personnel whose knowledge and relationships are important to the business. However, few staff are irreplaceable in a team effort like mining.

Source: Credit Suisse Risk comments: Credit Suisse, Factual data – 29Metals, BDA Technical Review of Capricorn Copper

Board and management

Board and management composition/experience

Figure 107: Board composition and experience

Name, position	Background
Owen Hergarty Non-executive Chairman	<ul style="list-style-type: none"> ■ Mr. Hergarty has more than 40 years' experience in the global mining industry and is a co-founder of EMR Capital. Mr. Hergarty's career spans executive roles and directorships across multiple mineral commodities and assets in Australia, Asia, Africa, Europe and the Americas. ■ Mr. Hergarty was formerly the Managing Director and Chief Executive Officer of ASX-listed Oxiana Limited (1995 -2008), leading the company to its merger with Zinifex Limited in 2008 to form ASX-listed Oz Minerals Limited (ASX: OZL). Prior to Oxiana, Mr. Hergarty's career included 25 years with the Rio Tinto Group, including as Managing Director of Rio Tinto Asia and Rio Tinto's Australian copper and gold business. ■ Mr. Hergarty is a current non-executive director of Tigers Realm Coal Limited (ASX: TIG) (since 2009). ■ Mr. Hergarty was previously a non-executive director of ASX-listed Fortescue Metals Group Limited (ASX: FMG) (2008 - 2016), including serving as vice-chairman from 2014 to 2016, and executive vice-chairman of Hong Kong-listed G Resources Limited (2009 - 2015) and executive Vice Chairman of Hong Kong-listed CST Mining (2010-2012). ■ Mr. Hergarty holds a Bachelor of Economics (Hons) from Monash University, is a fellow and former Director of the Australasian Institute of Mining and Metallurgy, and a fellow of the Australian Institute of Company Directors (AICD). ■ Mr. Hergarty has served and continues to serve on a number of government and industry mining advisory bodies, and is the recipient of a number of awards and citations for his achievements and service to the mining industry.
Peter Albert Managing Director & CEO	<ul style="list-style-type: none"> ■ Mr. Albert is an experienced mining executive, with more than 35 years' experience in the mining industry across multiple commodities and spanning Australia, Asia, Africa and Europe, including 25 years in CEO and executive roles for listed mining companies in Australia and Asia. ■ Mr. Albert joined EMR Capital in 2020. ■ Prior to joining EMR Capital, Mr. Albert was CEO of ASX-listed Highfield Resources Limited (ASX: HFR) (2016-2020), Jinchuan International (2015-2016) and G-Resources Limited (2009-2015), and Executive General Manager – Asia for ASX listed Oxiana Limited (later, OZ Minerals Limited) (2000-2009). ■ Earlier, Mr. Albert's career included roles with Fluor Australia, Shell-Billiton Australia, Davy John Brown and Johannesburg Consolidated Investments. ■ Mr. Albert holds a Bachelor of Minerals Engineering (Hons) from the University of Birmingham in the United Kingdom and an Executive MBA from the Monash-Mount Eliza Business School in Melbourne, Australia. ■ Mr. Albert is a member of the Australian Institute of Company Directors, a member of the UK Institute of Materials, Minerals and Mining (MIM03), a Chartered Engineer (UK) and a fellow of the Australasian Institute of Mining and Metallurgy.
Fiona Robertson Independent non-executive Director	<ul style="list-style-type: none"> ■ Ms. Robertson is an experienced finance executive and non-executive director with more than 30 years' experience in the resources sector (and 40 years' experience overall), including more than ten years as an independent non-executive director of ASX-listed resources companies. ■ Ms. Robertson held senior and executive finance roles, including the role of chief financial officer, with ASX-listed companies Petsec Energy Limited (2002-2012), Climax Mining Limited (2002-2006) and Delta Gold Limited (1991-1999). ■ Ms. Robertson's earlier career included credit risk management, corporate banking and resource financing roles with Chase AMP and Chase Manhattan Bank in Australia, New York and London. ■ Ms. Robertson is currently an independent non-executive director of ASX-listed Bellevue Gold Limited (ASX: BGL) and Whitehaven Coal Limited (ASX: WHC). Ms. Robertson is also chair of the Audit & Risk Committee for both companies. ■ Ms. Robertson was previously a director of ASX-listed Drillsearch Energy Limited (ASX:DLS) and Heron Resources Limited (ASX: HRR). In 2020 Ms. Robertson was named as one of "100 Global Inspirational Women in Mining" by Women in Mining UK. ■ Ms. Robertson holds a Master of Arts (Geology) from Oxford University in the United Kingdom. Ms. Robertson is a fellow of the Australian Institute of Company Directors and a member of the Australasian Institute of Mining and Metallurgy.

Jacqui McGill Independent non-executive Director	<ul style="list-style-type: none"> ■ Ms. McGill is an experienced mining executive with more than 30 years' experience in the mining sector, including executive and senior leadership roles spanning operations, business development, technology and project management across copper, iron ore and energy. ■ Ms. McGill's career includes 16 years with BHP, including as President Olympic Dam (2015-2018), President BHP-Mitsui Coal (2013-2015) and other senior roles in BHP's copper, uranium and iron ore divisions. ■ Ms. McGill's earlier career included roles with Heathgate Resources, ERA, Pegasus Mining Company and WMC. ■ Ms. McGill commenced her non-executive career as an independent nonexecutive director of ASX-listed New Hope Corporation Limited (ASX: NHC) in 2020. Ms. McGill is a member of the Audit and Risk Committee and chair of the Human Resources and Remuneration Committee at New Hope. ■ Ms. McGill was included in the Australia Day honours list in 2020 for services to the resources sector, and diversity and inclusion. ■ Ms. McGill holds a Bachelor of Science (Extractive Metallurgy) from Murdoch University in Western Australia, an MBA from Latrobe University in Melbourne and completed the Wharton Business School Executive Leadership Program. ■ Ms. McGill is a graduate of the Australian Institute of Company Directors and a fellow of the Australasian Institute of Mining and Metallurgy.
Martin Alciaturi Independent non-executive Director	<ul style="list-style-type: none"> ■ Mr Alciaturi is commencing his career as a non-executive director following a successful career as an executive and finance professional with combined experience of more than 40 years across investment banking, corporate finance and as a mining executive. ■ Mr Alciaturi was previously CFO and executive director of once ASX-listed Aquila Resources Limited (2010-2021) where Mr Alciaturi's responsibilities included strategy, business development, investor relations, finance and administration. ■ Prior to joining Aquila, Mr Alciaturi's career included 30 years in investment banking and corporate finance, including Head of Corporate Finance at Macquarie Capital in Perth (2006-2010), Partner in charge of Corporate Finance at EY in Perth (1996-2006), including head of the EY natural resources team, and as an executive director with Poynton Corporate (1993-1996). ■ Mr Alciaturi was also a member of the Australian Government's Takeovers Panel (2006-2015). ■ Mr Alciaturi holds a Bachelor of Science in mechanical engineering from University College London in the United Kingdom and a Graduate Diploma in Applied Finance and Investment from the Financial Services Institute of Australia. Mr Alciaturi is a fellow of Chartered Accountants Australia and New Zealand, and a member of the Australian Institute of Company Directors.

Source: 29Metals

Figure 108: Management composition and experience

Name, position	Background
Peter Albert Managing Director & CEO	<ul style="list-style-type: none"> ■ Mr. Albert is an experienced mining executive, with more than 35 years' experience in the mining industry across multiple commodities and spanning Australia, Asia, Africa and Europe, including 25 years in CEO and executive roles for listed mining companies in Australia and Asia. ■ Prior to joining EMR Capital, Mr. Albert was CEO of ASX-listed Highfield Resources Limited (ASX: HFR) (2016-2020), Jinchuan International (2015-2016) and G-Resources Limited (2009-2015), and Executive General Manager – Asia for ASX listed Oxiana Limited (later, OZ Minerals Limited) (2000-2009). ■ Earlier, Mr. Albert's career included roles with Fluor Australia, Shell-Billiton Australia, Davy John Brown and Johannesburg Consolidated Investments. ■ Mr. Albert holds a Bachelor of Minerals Engineering (Hons) from the University of Birmingham in the United Kingdom and an Executive MBA from the Monash-Mount Eliza Business School in Melbourne, Australia. ■ Mr. Albert is a member of the Australian Institute of Company Directors, a member of the UK Institute of Materials, Minerals and Mining (MIM03), a Chartered Engineer (UK) and a fellow of the Australasian Institute of Mining and Metallurgy.
Ed Cooney Chief Operating Officer	<ul style="list-style-type: none"> ■ Mr. Cooney is a mining engineer with more than 20 years' experience in base and precious metals mining operations and development projects spanning Australia and Indonesia, including 10 years in senior operational leadership roles. ■ Mr. Cooney's prior roles include a series of senior operations leadership roles at the privately-owned Martabe Gold Mine in Indonesia (2013-2019), including General Manager Operations (2015-2019) and Director Operations (2016-2019), and with BHP as Manager Mining (2010-2012) and Manager Resource Planning and Development (2009-2010) at the Cannington Mine in Australia. ■ Earlier, Mr. Cooney's career included roles with Xstrata, PT Petrosea, Barrick Gold and Mount Isa Mines, in Australia and Indonesia. ■ Mr. Cooney holds a Bachelor of Engineering (Mining) from the University of New South Wales and an MBA from the University of California, Los Angeles, and the National University of Singapore. ■ Mr. Cooney is a member of the Australasian Institute of Mining and Metallurgy. ■ At 29Metals, Mr. Cooney has functional accountability for site safety and sustainability, operations, operational risk management, project studies and development, Group planning, Group geology and exploration, and Ore Reserves and Minerals Resources.
Peter Herbert Chief Financial Officer	<ul style="list-style-type: none"> ■ Mr. Herbert is a corporate finance executive with 18 years' experience across private equity, investment banking and professional services with a Big Four firm. ■ Mr. Herbert joined EMR Capital in 2018 as an investment director responsible for corporate finance and strategic initiatives. Mr. Herbert has accepted a permanent role with 29Metals and has left EMR Capital following completion of the Offer. ■ Mr. Herbert's prior roles include Executive Director Energy and Natural Resources Group (Mining and Metals) with Standard Chartered Bank (2011-2018), Associate Director Mining and Metals M&A with Gryphon Partners (2009-2011), Executive-General Industrials with Macquarie Capital Advisers (2007-2009) and various roles with KPMG Corporate Finance (2003-2007). ■ Mr. Herbert holds a Bachelor of Commerce (Accounting and Corporate Finance) from the University of Western Australia and a Graduate Diploma in Applied Finance and Investment from the Financial Services Institute of Australia. Mr. Herbert also completed the Chartered Accountant requirements from the Institute of Chartered Accountants. ■ At 29Metals, Mr. Herbert has functional accountability for Group accounting and financial reporting, management reporting, treasury, concentrate marketing and logistics, Group commercial, ICT and business development.

Clifford Tuck General Counsel & Company Secretary	<ul style="list-style-type: none"> ■ Mr. Tuck is a legal and governance professional with more than 20 years' experience, principally in the resources sector, including more than 15 years in in-house legal and governance roles. ■ Mr. Tuck was engaged to assist with the establishment of 29Metals as a standalone company and preparation for the Offer. ■ Prior roles include General Counsel & Company Secretary (consultant) for Lattice Energy Limited (proposed IPO vehicle for the upstream oil & gas assets of ASX-listed Origin Energy Limited) (2017), General Counsel Company Secretary of ASX-listed Drillsearch Energy Limited (2014-2016) and various in-house roles with ASX-listed Newcrest Mining Limited (2005-2014), including Acting General Counsel (2013-2014) and Deputy General Counsel (2011-2013, 2014). Mr. Tuck's early legal career was with Allens (2001-2005). ■ Since 2017, Mr. Tuck has worked as an independent adviser to ASX-listed and private equity clients in the resources sector in relation to corporate transactions and governance matters. ■ Mr. Tuck was also formerly a non-executive director and member of the audit committee of ASX-listed Aurelia Metals Limited (ASX: AMI) (2018). ■ Mr. Tuck holds a Bachelor of Laws (Hons) from the Queensland University of Technology and a Bachelor of Applied Science (Hons) from the University of Queensland. ■ At 29Metals, Mr. Tuck has functional accountability for Group legal and governance, Group company secretariat (including subsidiary administration), Group risk and insurance and external affairs.
--	--

Source: 29Metals

Remuneration structure

- The stated objectives of 29M's remuneration strategy are:
 - Attract and retain talented personnel
 - Encourage and reward high performance
 - Alignment with equity stakeholder value
- **Fixed remuneration.** Targets 55-65th percentile of benchmark.
- **Variable remuneration.** Driven by 29M's short- and long-term incentive (STI and LTI) schemes. Variable remuneration forms a larger portion of overall remuneration for more senior employees, who are viewed as having greater capacity to impact company performance. Performance-based remuneration for more senior roles includes cash and equity, promoting alignment with equity stakeholder value. Over time, 29Metals intends to make equity remuneration available to all staff.
 - **Short-term incentives.** 2021 STI will be cash only. Beyond 2021, the board will consider using cash + performance rights for executive level STI. All STI is at the board's discretion and is based on performance relative to company, asset and personal performance metrics (executive level STI is based only on performance relative to company metrics).
 - **Long-term incentives.** Awards are in the form of performance rights with a three-year vesting period.
- **MD & CEO.** The managing director and CEO's STI, if awarded, falls between 80% and 120% of Total Fixed Remuneration (TFR) depending on performance relative to targets. LTI, if awarded, is equal to 100% of TFR in the form of performance rights with a three-year vesting period.
- **Other executives.** STI for other executives, if awarded, falls between 60% and 90% of their TFR. Their LTI, if awarded, is equal to 80% of their TFR in the form of performance rights with a three-year vesting period.

Environmental, Social and Governance

Environmental

Land disturbance and waste dumps

- 29Metals current operations are underground mines with a smaller footprint than open pit operations mines for both mining cavities/subsidence and waste rock dumps. The underground mines also dispose of a portion of the tailings (~25%) which are used in paste fill plants to refill exhausted mine voids.
- Through 29Metals acquisition of historical mine sites, it has inherited significant surficial disturbance, including open pit voids, waste dumps and tailings containment facilities at its mining operations, which have become its responsibility to manage and remediate. It has recognised a liability of A\$97.5mn for the future cost of rehabilitation and restoration with costs discounted to the present value using a discount rate of 3%.

Water management

Mine sites require water for processing, and disposal of ground water ingress to its mines.

- Golden Grove water management:
 - Total site water demand is ~620ML per annum which is met from groundwater primarily sourced through dewatering the Gossan Hill (290ML per annum) and Scuddles (540ML per annum) underground mines.
 - Potable water for the Golden Grove mine camp is met with bore water treated by reverse osmosis. Brine from the RO plant is added to process water.
 - Excess treated water is discharged to Lake Wownaminya via pipeline and subject to water quality monitoring.
- Capricorn Copper water management:
 - Capricorn Copper process water consumption is approximately 4ML per day which is principally drawn from water storage on-site treated with reverse osmosis, and supplemented with raw water drawn from Lake Waggaboonya.
 - The reverse osmosis plant to treat process and mine waste water for reuse has reduced raw water consumption by 2ML per day.
 - A critical environmental risk at Capricorn Copper is the level of accumulated water held in regulated on-site storage facilities, which exceeds the prescribed limits for the onset of the traditional wet season (November to April). In 2019 and Sep 2020, the Queensland Department of Environment and Science issued an Environmental Protection Order requiring Capricorn Copper to take various steps to reduce stored water levels and mitigate the risk of an uncontrolled release of untreated mine wastewater to the environment no later than 1 Nov 2022. From 8 March 2021 only one relevant facility – EPit – exceeded the prescribed limits for the beginning of the wet season. However, the water level in the EPit has been lowered by approximately 6.2 vertical metres as a result of the actions taken by Capricorn Copper since November 2020.
 - Capricorn Copper has a number of projects aimed at maximizing the use of stored and re-use water in order to prevent an accumulation of water on site and reduce consumption of raw water from the Lake. The volume of fresh water drawn by Capricorn Copper reduced by 46% in 2020 relative to 2019.

Tailings containment

- 29Metals supports the Global Industry Standard on Tailings Management published by the International Council on Mining and Metals (August 2020) (the 'ICMM Tailings Standard')

as a framework for the responsible management of tailings. 29Metals is assessing the application of the ICMM Tailings Standard to identify opportunities to enhance its approach to tailings management. Each of the tailings storage facilities at 29Metals' operating sites is subject to annual assurance programs undertaken by independent experts.

- 29Metals has paste fill plants at both Golden Grove and Capricorn Copper. The coarser fraction of the tailings is used in the paste to backfill underground mining voids, reducing the volume by around 25%. The fine fraction is sent for settling to tailings storage facilities.
- There are two tailings containment facilities at Capricorn Copper, one a cross valley TSF (ETSF), the other filling at the Esperanza open pit mining void (EPit) which is currently used as the active storage. EPit is nearing its design storage allowance and a further EA will be needed for further tailings deposition into the pit. Capricorn Copper intends to seek licence approval to increase the in-pit storage level. For this to occur, Capricorn will need to be able to demonstrate negative water balance, draw all process water from the site. 29Metals seeks to reactivate ETSF with a three meter raise to contain one year's tailings while EPit is expanded. The approval to lift the ETSF was received in late July.
- There are three TSFs at Golden Grove, with TSF 3 currently active, and there is a proposal to reactivate TSF 1 with two additional lifts.

Tailings containment with upstream construction methods

- Historic raises of the ETSF at Capricorn Copper used the upstream construction method. All three TSFs at Golden Grove use upstream methods.
- Two tailings dam collapses in Brazil in 2015 and 2019 resulting in numerous loss of lives and widespread environmental damage highlighted the risks inherent in upstream construction methods for tailing containment. There is demonstrated risk of collapse with upstream dams if they are incorrectly managed, allowing liquification. In such a case, the environmental penalties and clean-up costs would be severe.
- At Golden Grove, the inactive TSF 1 and 2 are considered low risk with little chance of liquification due to densification over time. The latest TSF 3 audit concluded it is generally in good condition, with no new seepage spots noted, and piezometers generally indicate water levels in prescribed margins, but there are some outliers where isolated Piezometers show rapid level increases. These require monitoring and perhaps the piezometers require replacement. Some consultants considered the latest raise did not meet minimum stability levels recommended by Australian National Committee on Large Dam, so buttressing was added to provide additional support, as recommended.

Climate change impacts

29Metals notes approach to climate change includes:

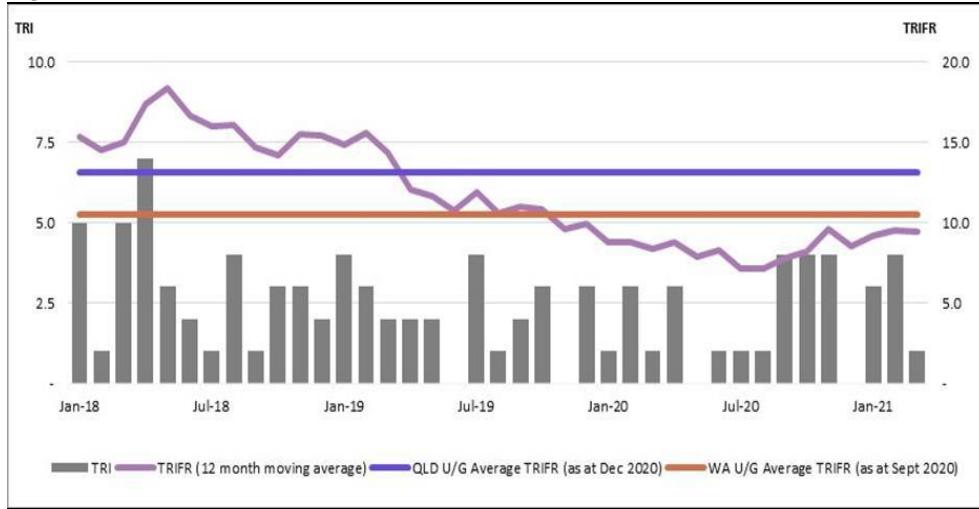
- A focus on copper which is a critical input into the technologies at the heart of electrification, decarbonisation and the global transition to a greener economy; and has lower life-cycle emissions relative to other battery component metals; and
- Continuous improvement in identifying and pursuing opportunities to reduce energy intensity.
- Both of 29Metals operations are connected to a grid via high voltage transmission lines, so it does not directly control the source of the power. In WA, 29Metals professes support for energy suppliers using a higher proportion of renewable energy sources.
- Golden Grove has three 1.15Mw diesel back-up generators to maintain essential services in the case of power outages.
- Capricorn copper is supplied with electricity from the Diamantina power station in Mount Isa, via a high voltage transmission line

Social

Health and safety

- 29Metals notes that over the last three years, its Total Recordable Injury Frequency Rate (TRIFR) has fallen below the industry average rates for underground mines in Queensland and WA, due to improved management systems and processes together with work force commitment.

Figure 109: Golden Grove and Capricorn Copper TRIFR and TRI (2018-21)



Source: 29Metals

COVID-19 management

- 29Metals maintained normal operations and achieved no recorded COVID cases across the workforce at the sites. It has not documented any special procedures implemented, but is subject to the same anti-COVID restrictions as the broader Australian community.

Community

- 23% of the Golden Grove workforce resides locally.
- Golden Grove makes contributions to community development activities, including the Bayalgu indigenous pre-employment program aimed at providing training and support for local people to join the workforce.
- About 10% of the Capricorn Copper workforce reside in the Mount Isa area.
- Capricorn Copper has an active stakeholder engagement program, maintaining relationships with traditional owners and neighbouring pastoralists, and making some community contributions.

Native title

- The Golden Grove tenement area has been the subject of two native title determinations:
 - The Yamatji Nation Determination on 7 February 2020, and associated Indigenous Land Use Agreement ('ILUA') registered on 30 July 2020, confirmed that native title does not exist in the area covered by the Golden Grove tenements, confirmed the validity of existing tenements, including the Golden Grove tenements within the determination area, and included a release from native title compensation; and
 - The Badimia People Determination in May 2015 confirmed that native title does not exist in the relevant determination area.

- Regardless, Golden Grove maintains a positive relationship with local indigenous groups, which includes cultural heritage surveys and engagement to identify local heritage and manage any impacts.
- All Capricorn Copper mining tenements are valid for Native Title purposes. Capricorn Copper has entered into certain native title agreements, including ancillary agreements and deeds of variation, which include non-binding targets for employment positions for native title holders in roles relating to the project, and contracts for the supply of goods and services to associated businesses.

Cultural Heritage

- At Golden Grove, 29Metals has undertaken cultural heritage surveys at all of the areas covered by current mining operations at Golden Grove, and identified cultural heritage sites have been protected and avoided.
- Golden Grove also has Cultural heritage management plans, prepared in consultation with traditional owner groups, in place for registered heritage sites as well as other sites of significance to traditional owner groups.
- Capricorn Copper has a cultural heritage management agreement with a local indigenous group on relatively standard terms for agreements of this kind, including acknowledgement that a cultural heritage survey was conducted prior to entry into the agreement; and responsibility on Capricorn Copper for storage and safety of all artefacts and significant Aboriginal objects removed from the project area to facilitate the project.

Governance

Board Independence

- 29Metals has been established as an independent company by EMR Capital, which has set up a Relationship Deed allowing it to nominate directors at certain EMR equity ownership thresholds.
- EMR Capital nominees and 29Metals management are not considered independent directors.
- 29Metals has five directors – the Chair Owen Hegarty; a managing director being the CEO Peter Albert; and three independent directors (Fiona Robertson, Jacqueline McGill and Martin Alciaturi).
- The Chair of 29Metals – Owen Hegarty – is an EMR Capital nominee and is therefore not independent. EMR believes Mr. Hegarty is the most appropriate chair as his long exposure to, and knowledge of the industry, should be of significant value to the board.
- The three independent directors are experienced mining company directors, and two are female.
- The board intends to appoint an additional independent director and an additional EMR Capital nominee to the board contemporaneously, ensuring that the majority of the board are independent at all times.

Board remuneration

- The Chair of the board will be paid A\$250,000 per annum and other non-executive directors a base fee of A\$140,000 and A\$20-\$50k committee fees for members or Chairs of board sub-committees.
- From 2022, directors will receive A\$40k per year of the directors fees in the form of equity. In 2021 the amount paid as equity will be A\$20k.
- It is the intention of the Board to adopt a policy whereby all Directors will be required to acquire and maintain a target minimum equity stake in 29Metals at least equal to the aggregate annual amount of fees paid or payable to the Director (excluding any special or additional fees) within a period of four years after their initial appointment as a Director.

Copper sector analysis and price forecast

The below copper sector analysis is an extract from Credit Suisse Base Metals Forecasts update '*Metal demand looks strong but we choose key picks by supply*', published 13 May.

Supply wave looms, but real deficit on the horizon

The copper price is running hard on an underlying narrative of a copper shortage and emerging supercycle, supported by a soft US dollar, loose monetary policy, ongoing US fiscal stimulus proposals, and worries of inflation. We believe the rally is premature as the structural shortfall lies on the mid-decade horizon. Incipient demand for decarbonisation currently lacks the critical mass to drive a 23Mt global market. The copper price has outrun fundamentals, entered bubble territory and we expect it to deflate before the end of the year. Flat premiums show little interest in spot copper supplies, and visible copper stocks have climbed, suggesting demand destruction may be underway, negating our expectation of a deficit. Mine supply growth exceeding 6%pa in 2022-23 on previously sanctioned projects should lead to growing surpluses from 2022-25.

Revised prices higher, including LT copper price to \$3.50/lb

We expect the current copper price of ca.\$4.50/lb may last through 3Q as China's State Grid enters the market, but should unwind late in the year. As the supply wave rolls in, swamping the market in surpluses, we expect the price to subside to \$3.20/lb by 2023. However, a structural copper shortage is visible mid-decade and we believe feasibility studies will need to use a higher copper price to advance sufficient projects. We presage this with our LT price lift to \$3.50/lb.

Figure 110: Revised copper price forecast

	2020	1Q-21	2Q-21	3Q-21	4Q-21	2021E	1Q-22	2Q-22	3Q-22	4Q-22	2022E	2023E	2024E	2025E	LT (real)	
New	US\$/t	6,175	8,502	9,700	9,820	8,820	9,210	7,720	7,720	7,280	7,280	7,500	7,060	7,280	7,940	7,715
New	US\$/lb	2.80	3.86	4.40	4.45	4.00	4.18	3.50	3.50	3.30	3.30	3.40	3.20	3.30	3.60	3.50
Old	US\$/lb	2.80	3.86	3.70	3.50	3.30	3.59	3.20	3.20	3.20	3.20	3.20	3.00	3.10	3.29	3.00
Chg	%	0%	0%	19%	27%	21%	16%	9%	9%	3%	3%	6%	7%	6%	9%	17%

Source: Credit Suisse estimates

Looming supply wave threatens surpluses until mid-decade

While copper may be in deficit this year, mine supply from projects sanctioned before 2019 is entering production and should lift supply growth above 6%pa in 2022 & 23. We estimate copper demand for EVs rather than ICEs at just 400kt this year, but expect it to reach 1.1Mt by 2025. With other decarbonisation demand, this should drive a mid-decade deficit. Few projects are advancing to meet this demand, so higher copper prices are needed in feasibility studies.

Figure 111: Global copper supply & demand summary

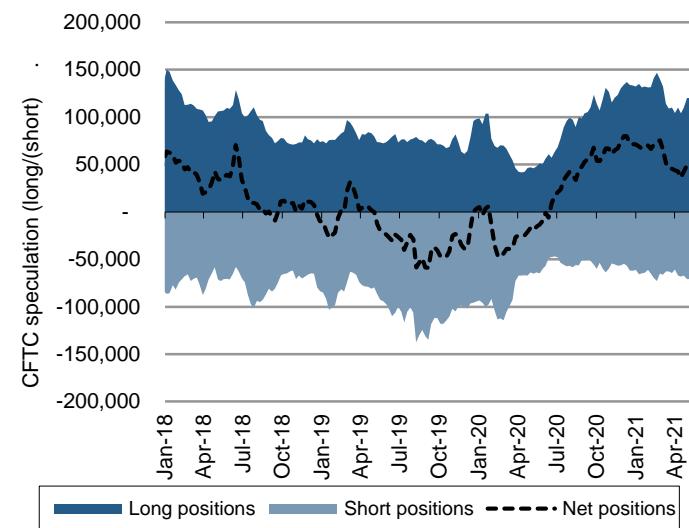
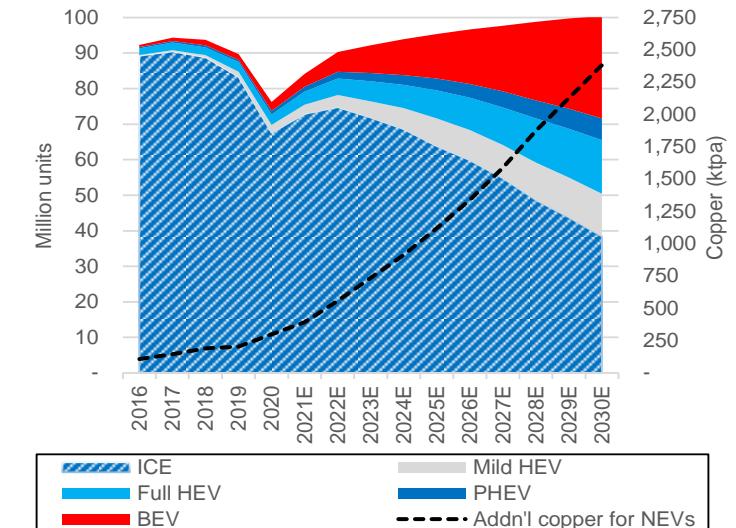
	2018	2019	2020	2021f	2022f	2023f	2024f	2025f
World mine supply (kt)	20,771	20,846	20,659	20,925	22,263	23,583	24,365	24,670
Chg YoY	3.1%	0.4%	-0.9%	1.3%	6.4%	5.9%	3.3%	1.2%
included disruption (kt)	-	-	-	(722)	(1,172)	(1,241)	(1,282)	(1,298)
Concentrate supply (kt)	17,134	17,237	17,138	17,589	18,884	20,140	21,081	21,524
SX/EW copper (kt)	3,622	3,594	3,505	3,320	3,364	3,428	3,270	3,130
Smelter production (kt)	18,931	19,068	19,566	19,719	21,090	22,393	23,418	23,909
smelting scrap supply (kt)	2322	2433	2251	2609	2721	2802	2911	2971
Demand for concentrate (kt)	17,139	17,168	17,800	17,589	18,884	20,140	21,081	21,524
Concentrate surplus/(deficit) (kt)	(5)	69	(662)	-	-	-	-	-
refining scrap supply (kt)	1,149	998	923	967	997	1,017	1,017	1,048
Electro-refined copper production (kt)	20,080	20,066	20,489	20,686	22,088	23,410	24,435	24,957
Total refined copper supply (kt)	23,702	23,660	23,994	24,006	25,451	26,839	27,704	28,088
World Copper consumption (kt)	23,715	23,849	23,458	24,217	25,227	26,310	27,124	28,051
Chg YoY	2.6%	0.6%	-1.6%	3.2%	4.2%	4.3%	3.1%	3.4%
China consumption Chg YoY	6.1%	2.8%	2.9%	2.6%	2.7%	2.4%	2.1%	3.1%
China restocking demand	430	200	1200					
Copper balance (kt)	(443)	(389)	(664)	(211)	224	529	580	37

Source: Wood Mackenzie, Lilan Consulting, Company data, Credit Suisse estimates

Supply wave looms, but real deficit on the horizon

The current price rally has become a bubble ahead of a supply wave

The current copper price rally is far above any cost or incentive-price based explanation, so there is no basis to predict how far it will rise. Ultimately it is a speculative rally underlain by the positive narrative of decarbonisation and protagonists talk of a supercycle, spurred on by US administrations hopes to pass infrastructure stimulus and with supporting roles for a deluge of liquidity, cheap funding costs, worries about inflation and a weak US dollar. But no matter how high it rises in the near term, we believe the rally has turned into a bubble and should not outlast the year as there is a supply wave approaching.

Figure 112: Copper speculators remain net long on COMEX**Figure 113: Copper bulls look at exponential demand from EVs**

Source: COMEX, Credit Suisse estimates

Source: Credit Suisse estimates

Speculators have done well, but will need to exit before supply becomes evident

The investment in copper has been highly profitable, and many would be wondering when to take their money off the table. It is difficult for us to judge when that may be, but it should spell

the end of the rally. The super –cycle call from earlier this year came with a 12 month price target of \$9500/t, but five months in, that target has been left behind. Now speculators need to decide whether to pocket the proceeds or hold on, perhaps the new stimulus attempts by the US administration warrants an even higher target.

Some copper producers are trying to encourage a higher target: We note a recent report in Bloomberg of the Glencore CEO saying the price of copper needs to rise another 50% to \$15,000/t (\$6.80/lb) to encourage sufficient supply to meet demand from the global green revolution. This is supported by other traders and speculators, Trafigura and Goldman Sachs, but the latter referring to the middle of the decade. We agree that a copper shortfall appears evident by mid-decade and believe that miners need to use a price higher than the current \$3/lb in feasibility studies, to approve the next generation of mines. We have lifted our LT copper price to \$3.50/lb on that basis, which is discussed in some detail below. But we see no basis for a call of \$6.80/lb – such a price looks more liable to destroy demand. Indeed, the IEA has warned that high mineral prices could delay a transition to clean energy given the volume of these minerals needed. Historically, high prices have destroyed high prices.

A +\$4/lb copper price is not required now

Whether or not stronger prices are required in the middle of the decade, they are certainly not required now:

- Copper inventory is plentiful – around 1Mt is visible;
- Demand is beginning to look sluggish, with flat to falling premiums; and
- There are large surpluses from 2022, as new mines sanctioned before 2019 begin production.

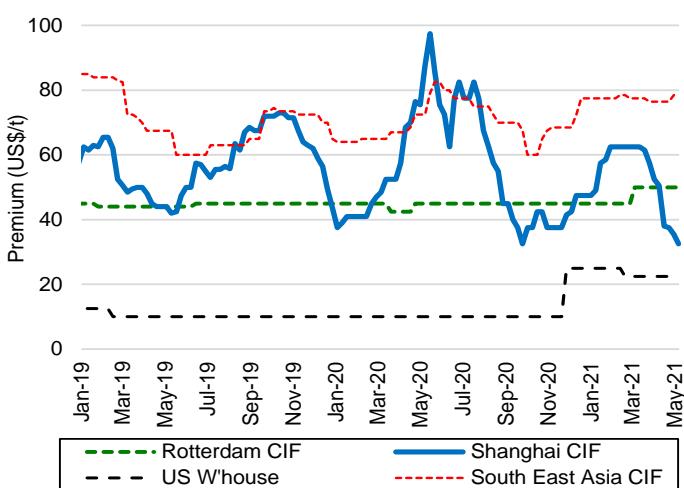
Hard to guess the peak and timing, but we believe the price should be falling by 4Q

- Trying to pick the peak price and end-date of a speculative price rally is impossible – it's really determined by the weight of speculators, when they decide that risks are outweighing further potential rewards and exit the position. From our perspective, we expect the price rally will not extend into 2022 as rising mine production will make it harder to argue for a metal shortfall. But we are aware that China's State Grid has been holding back on its 2021 copper purchases, given the high price, so when it does put in orders – likely 3Q at the latest – it may encourage the market. Trying to pick an average price in the midst of such rapid rises is a hopeless task and the pace of the rally is over-running targets before we even publish. Nevertheless, we expect the copper price may start to fall rapidly in 4Q.

High copper price destroying demand?

While we have forecast a supply deficit of just over 200kt this year, it is possible that high copper prices is already destroying demand and our deficit will not eventuate. The international Copper Study Group is forecasting an 80kt surplus this year growing to 110kt next year. The current data is a striking contrast to the rhetoric of the copper bulls.

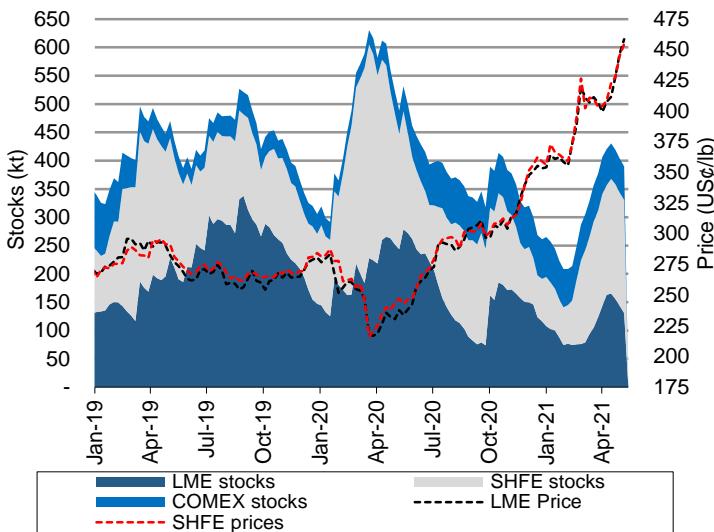
Copper premiums have been flat since March for much of the world, but declining steeply in China. Combined with the negative arbitrage in China, this shows there is no interest in spot copper supply – a striking contrast to last year. Unsurprisingly, China's copper imports have not carried on the strength of last year. It is possible that the volume bought last year by China's SRB was greater than we expect and explained much of the demand strength.

Figure 114: Copper premiums flat to down from Mar

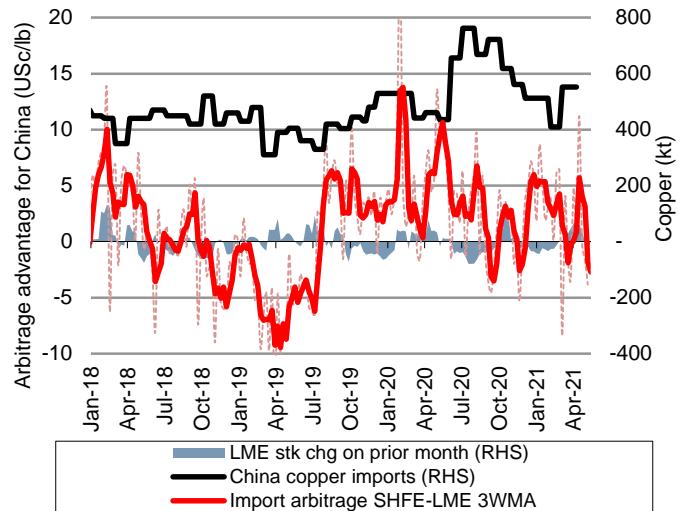
Source: Fastmarkets, Credit Suisse estimates

Visible copper inventories are not running down. Exchange stocks hit a recent peak in April, which stocks in bonded warehouses in China have been growing since February. The negative arbitrage and falling premiums in China are not encouraging owners to seek customs clearance into China.

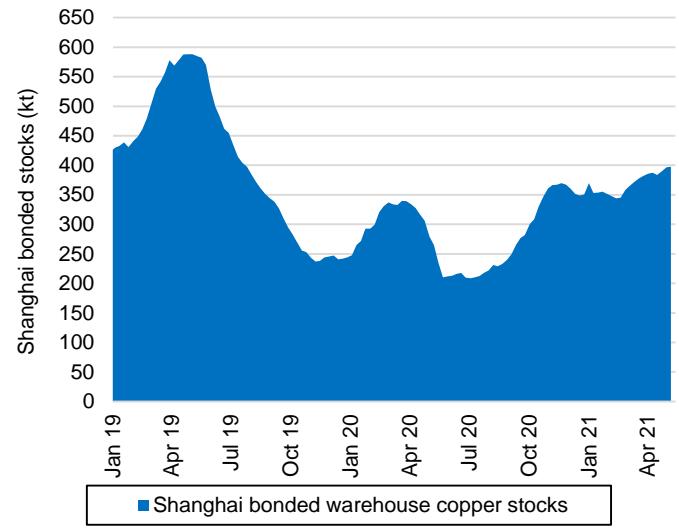
Additional reported stocks are those in the LME's monthly tally of off-warrant stocks, which has increased from 76kt in Feb 2020 to 175kt in Feb 2021, with a continuous rise since Sep. The tally is not comprehensive as reporting of off-warrant stocks in or near LME warehouses remains on a voluntary basis with no penalty for not reporting. Irrespective, the data indicates plentiful visible copper inventory, of available, around 1Mt in exchange stocks, Shanghai bonded warehouses and off-warrant LME. There is no doubt more inventory which is not visible, stored in private warehouses.

Figure 116: Global exchange copper stocks

Source: LME, COMEX, SHFE, Credit Suisse

Figure 115: Copper arbitrage for China shipments closed

Source: LME, SHFE, customs data, Credit Suisse estimates

Figure 117: Shanghai bonded warehouse stocks

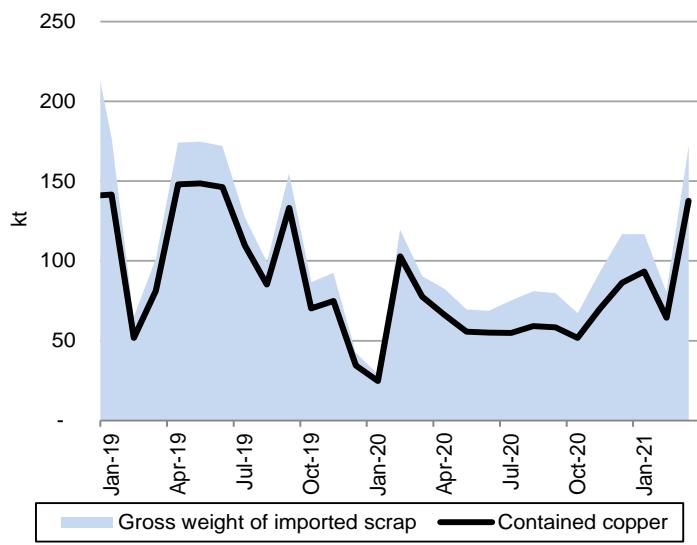
Source: SMM, Credit Suisse

Scrap supply increasing encouraged by high prices

Apart from destroying demand, another effect of high copper prices is to encourage the collection of scrap. Scrap collection suffered last year, with global lockdowns in COVID, and early in the year, poor copper prices. However, the current record copper prices highly encourage collection of scrap. Indeed we may soon see the phenomenon of copper theft once again.

Scrap is priced at a discount to refined copper, and that spread is rising. In part that may be due to rising copper prices, but it also tends to point to an abundance of scrap. When scrap is scarce, in a few instances high grade scrap has been priced at a premium to refined copper, an unusual occurrence. There is now increasing (high grade) scrap being imported by China, as it has customs rules in place classifying the scrap as a resource. We understand the inspections are strict, and in several instances, scrap with paint attached has been rejected. Importers are generally ensuring only the cleanest scrap is imported, as that ensures it will pass customs. The additional clean scrap can replace refined copper.

Figure 118: China imported copper scrap – lifting

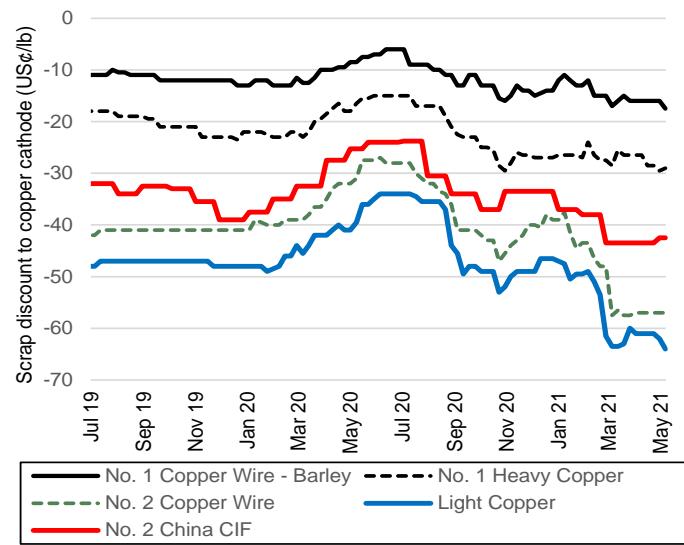


Source: Customs data, Lilan Consulting, Credit Suisse estimates

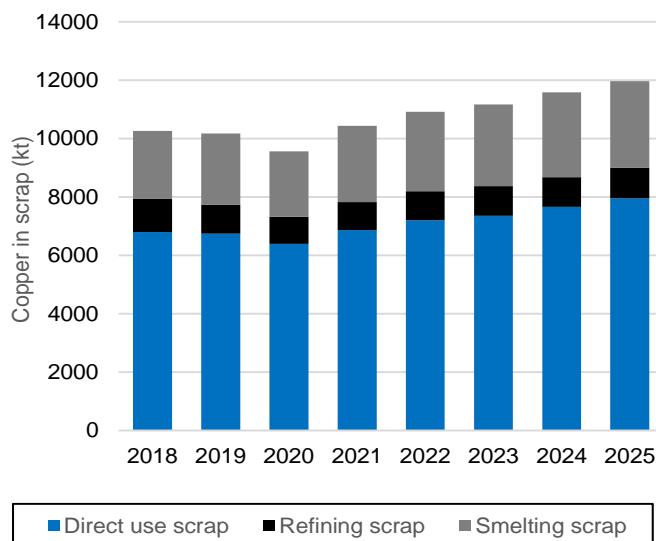
Lilan Consulting revised up its estimated domestic scrap collection in China for 2020 given better than expected production rates at most disassembling yards. It now estimates overall domestic scrap generation dropped 5.5% YoY to 1,635kt in 2020, with new scrap generation increasing 2% and old scrap generation falling 11.3% YoY. For 2021, Lilan Consulting believes China's scrap generation might increase 12.5% YoY, led by old scrap lifting 21.5% this year (and 14.3% above 2019). With high metal prices, some disassembling yards have increased operating rates since late last year. And with widening scrap spreads fabricators are increasing direct usage scrap in place of refined copper

The Chinese Government is also trying to improve scrap recycling and in February the State Council issued the "Instructions on Accelerating the Establishment and Improvement of a Green, Low-Carbon, and Circular Development Economic System", aimed at strengthening the recycling of renewable resources and improving the EOL household appliances recycling and disassembling system.

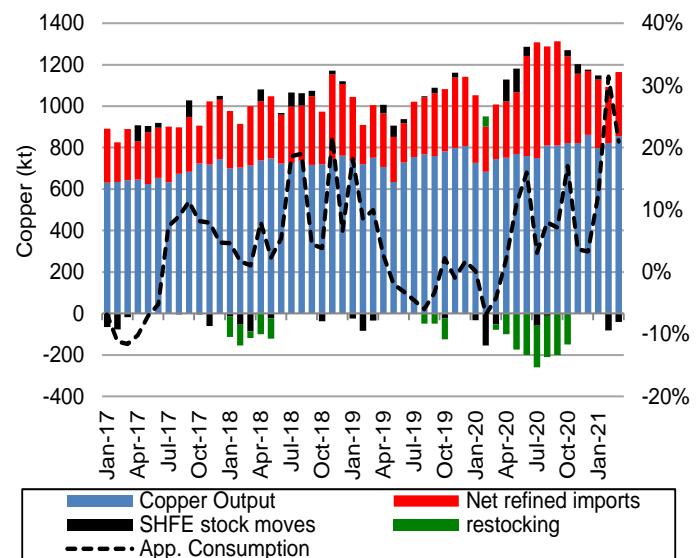
Figure 119: Copper scrap discounts to refined copper price



Source: Fastmarkets, Credit Suisse estimates

Figure 120: Global scrap supply improving

Source: Wood Mackenzie, Lilan Consulting, Credit Suisse estimates

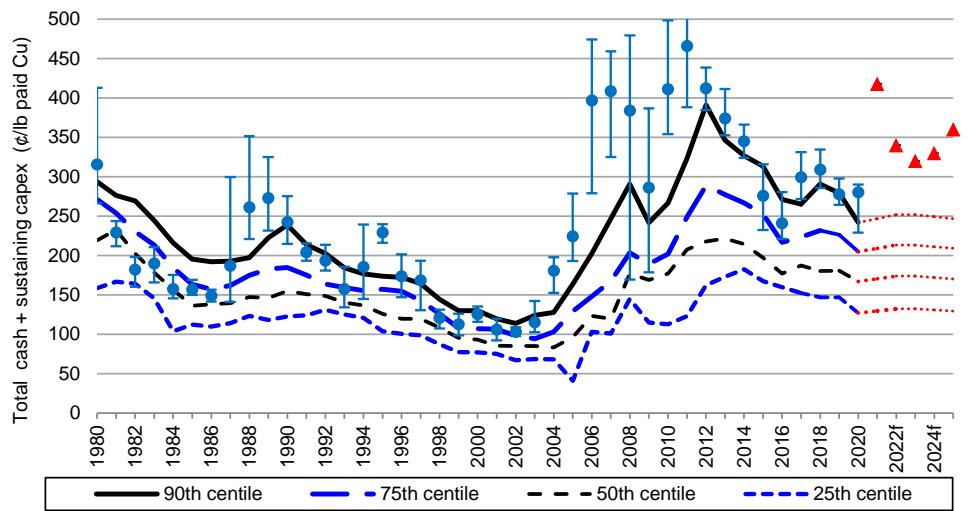
Figure 121: China refined copper consumption

Source: SMM, Lilan Consulting, China customs, SHFE, Credit Suisse estimates

Mine cost curve

The current copper price of \$4.70/lb has matched the highs of 2011 in real terms, but the cost base is far lower without the escalation seen in 2011-12 so the profit margin for producers is vast. Given soft demand and growing supply, there is little to justify such prices, in the medium term, so we expect price will soften as surpluses build. We find it difficult to accept that a price of \$6.80/lb could be considered necessary, as the Glencore CEO has claimed.

In previous times with well-supplied markets, the price of copper retreats to the 90th percentile of the all-in cash cost curve. However, we don't expect that to occur in 2022-24 as we expect the market will be looking at growing demand and emerging deficit in the mid-decade. That should serve to maintain elevated prices, despite abundant supply. We also believe these stronger prices will be required to convince producers to use a higher price of \$3.50/lb for feasibility studies of new projects, allowing them to advance towards approval. While we see no real shortage of viable projects, we do see a shortage of projects that can gain regulatory approval, as discussed below in our work on the LT copper price.

Figure 122: 45 year cost curve C1 +sustaining capex, with forecast prices (real terms)

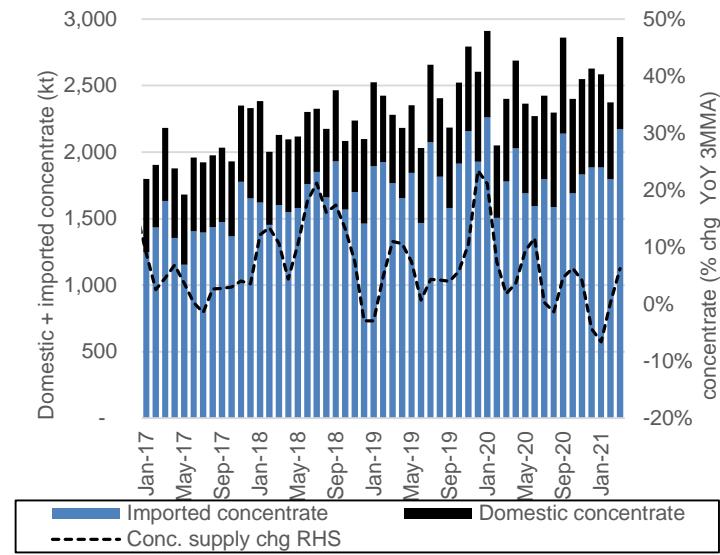
Source: Wood Mackenzie, Credit Suisse estimates

Mine supply

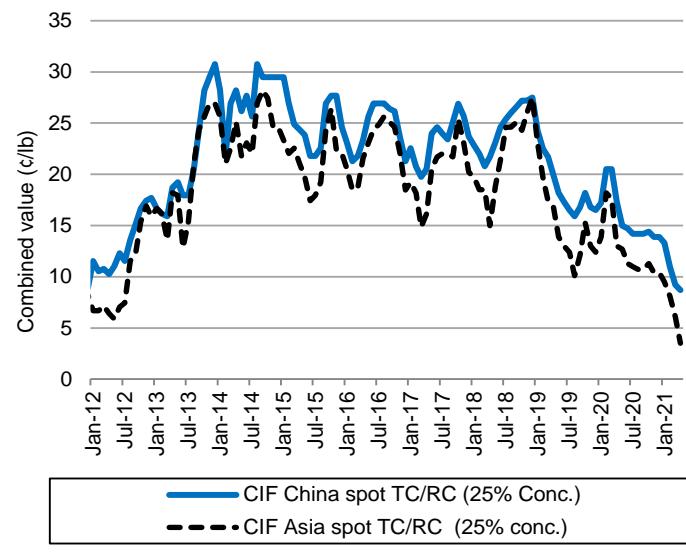
Peak mine supply tightness may have passed already

Copper concentrate has been tight in 2021 as COVID continues to affect mines. Especially in the early months of this year, shipments from Chile were delayed by rough weather at ports, and a resurgence of COVID in South America has also been a hindrance. The tightness of concentrate supply at smelters is shown by spot TC/RCs plumbing near record lows. However, the latest estimates from Fastmarkets in May show spot TC/RCs in Asia beginning to lift again. Imports to China lifted in March, and Chinese smelters said they were well supplied and did not intend to buy in 2Q. With low premiums and little interest in spot supply, smelters will be in no rush to produce at higher rates, so we may have passed the peak mine tightness already.

However, there are new risks emerging which have the potential to interrupt supplies:

Figure 123: China concentrate supply

Source: Customs data, Credit Suisse estimates

Figure 124: Asia & China spot TC/RC (¢/lb combined for 25%)

Source: Wood Mackenzie, Credit Suisse estimates

Key Risks for mine supply

Big year for Chile labour negotiations introduces risk on mine supply gaps

Chile's copper miners face one of the largest set of labor negotiations in recent years with over 40 labor negotiations due to take place this year. Fastmarkets reported that the mines with labour negotiations produced around 60% of Chile's copper output in 2020 or 17% of the world's total mined copper production, according to International Copper Study Group figures. While some key negotiations have already concluded, almost half are set for the second half of 2021. Codelco is to negotiate with workers at El Teniente, and BHP's contract with workers expires 1 August, amongst a number of others.

Risks of new President in Peru raising mining taxes

In neighboring Peru, which holds the northern extension of the South American copper belt, new mines commonly face widespread objections from landowners, and some see frequent protests and blockades. But now there are greater risks as presidential elections are under way and the front-runner - Pedro Castillo - has said he would, if elected, review contracts with foreign miners in the copper-rich country and raise taxes. Fastmarkets reported that '*Castillo said foreign firms had "plundered" the country and that if elected president, he would ensure that 70% of profits would remain in Peru. "We are going to review the contracts. Enough looting of my people," he said in a debate with Fujimori, in a public square in the mountainous Cajamarca region, referring to gas projects and metals mining'*'.

Risks of higher taxes in Chile

In May, the Chilean Parliament's lower house has voted to approve a mining royalty bill that could see sales of copper taxed at escalating rates tied to the copper price. The Government has vowed to block the Bill in the Senate, so it is unlikely to be enacted, but does raise risks for miners in the key copper nation. Fastmarkets noted the bill is likely to face the Senate after upcoming elections to choose members of a commission to write the country's new Constitutional convention, as well as the country's municipality and regional governor elections - both this month. Under the proposed bill, the tax on sales of copper would be 3% if the price is \$2 per lb or less. But the tax rate will increase as the price of copper rises, to an effective rate of 5.4% at \$2.50 per lb, up to 27.4% at \$4.50 per lb and 32.3% at \$5 per lb.

Supply wave is starting

Supply wave approaching for 2022 and 2023

The current supply deficit should end in 2022 as the wave of new supply arrives, returning the copper market to surplus. We estimate mine supply will grow by 1Mt in 2022 and another 1Mt in 2023. New mines this year include the expansion of BHP's new Spence hypogene mine – just started; Freeport's Grasberg output growing by 240kt - as it passed the production pinch point in the transition to underground mining last year and is now expanding; Ivanhoe/Zijin's Kamoa-Kakula project in DRC, where mining is ahead of schedule and first mill production is due before 3Q this year; and Mina Justa in Peru.

2022 and 2023 should see substantial output from four big new porphyry copper mines: Teck's QB2 project in Chile, Anglo's Quellaveco in Peru; and RIO's long-delayed Oyu Tolgoi underground project, and Udokan in Russia.

Figure 125: Major growth mines (kt, contained copper)

Mine	Country	Owner	2020	2021	2022	2023	2024	2025	2020-25
Kamoa-Kakula	DRC	CNMC	0	50	150	300	427	389	389
Timok	Serbia	Nevsun	0	20	135	145	129	102	102
Oyu Tolgoi	Mongolia	Rio Tinto	148	159	175	230	437	440	292
Collahuasi expansion	Chile	Anglo/Glen	629	614	614	568	680	743	114
Chuquicamata UG	Chile	Codelco	99	239	342	428	458	426	327
Spence Sx/EW	Chile	BHP	146	177	136	115	115	52	-94
Spence Hypogene	Chile	BHP	0	50	185	185	185	185	185
Quebrada Blanca	Chile	Teck	0	0	20	200	290	290	290
Quellaveco	Peru	Anglo American	0	0	80	331	380	435	435
Mina Justa	Peru	Minsur	0	105	156	148	143	108	108
Tia Maria	Peru	SCC	0	0	0	0	45	105	105
Cobre Panama	Panama	First Quantum	206	310	325	425	401	385	179
Mirador	Ecuador	Lundin	31	60	96	117	126	122	91
Carrapateena	Australia	Oz Mineral	28	58	63	70	71	87	59
PT Freeport	Indonesia	Freeport	380	618	760	808	760	760	380
Tominsky	Russia	Russian Copper Co.	0	20	55	75	85	90	90
Udokan	Russia	Udokan Copper	0	0	51	136	137	140	140
Total			1667	2480	3344	4280	4869	4859	3192
Annual increment			220	813	864	937	588	-10	

Source: Company data, Wood Mackenzie, Credit Suisse estimates

Figure 126: China supply & demand summary

	2018	2019	2020	2021f	2022f	2023f	2024f	2025f
China mine supply (kt)	1480	1515	1550	1655	1790	1840	1880	1922
Chg YoY	1.0%	1.3%	1.7%	7.4%	8.1%	2.7%	2.4%	2.4%
Concentrate imports	4,986	5,561	5,401	5,795	6,421	7,064	7,357	7,625
Concentrate supply (kt)	6,466	7,076	6,951	7,450	8,211	8,904	9,237	9,547
SX/EW copper (kt)	75	60	52	65	70	70	75	80
Smelter production (kt)	7,204	7,869	7,807	8,431	9,296	10,051	10,486	10,848
smelting scrap supply (kt)	1,050	1,120	970	1,230	1,290	1,370	1,480	1,540
Demand for concentrate (kt)	6316	6926	7011	7387	8211	8904	9237	9547
Concentrate surplus/(deficit) (kt)	150	150	(60)	63	-	-	-	-
refining scrap supply (kt)	650	490	410	400	430	450	450	480
imports blister anode (kt)	901	755	1,029	970	840	900	970	1,020
Electro-refined copper production (kt)	8755	9114	9246	9801	10566	11401	11906	12348
Total refined copper supply (kt)	8,830	9,174	9,298	9,866	10,636	11,471	11,981	12,428
China Copper consumption (kt)	11872	12209	12557	12877	13223	13540	13826	14251
Chg YoY	6.1%	2.8%	2.9%	2.6%	2.7%	2.4%	2.1%	3.1%
Restocking demand	430	200	1200	0	0	0	0	0
Copper balance (kt)	(3,472)	(3,235)	(4,459)	(3,012)	(2,588)	(2,069)	(1,844)	(1,823)

Source: Lilan Consulting, Wood Mackenzie, Credit Suisse estimates

Figure 127: World ex-China supply & demand summary

	2018	2019	2020	2021f	2022f	2023f	2024f	2025f
ROW mine supply (kt)	19,291	19,331	19,109	19,270	20,473	21,743	22,485	22,748
Chg YoY	3.3%	0.2%	-1.2%	0.8%	6.2%	6.2%	3.4%	1.2%
Included mine supply cuts				-	-	-	-	-
Concentrate exports to China	(4,986)	(5,561)	(5,401)	(5,795)	(6,421)	(7,064)	(7,357)	(7,625)
Concentrate supply (kt)	10,668	10,161	10,187	10,139	10,673	11,236	11,844	11,977
SX/EW copper (kt)	3,547	3,534	3,453	3,255	3,294	3,358	3,195	3,050
Smelter production (kt)	11,726	11,198	11,759	11,289	11,795	12,342	12,932	13,061
Smelting scrap supply (kt)	1,272	1,313	1,281	1,379	1,431	1,432	1,431	1,431
Demand for concentrate (kt)	10,823	10,242	10,789	10,202	10,673	11,236	11,844	11,977
Concentrate surplus/(deficit) (kt)	(155)	(81)	(602)	(63)	-	-	-	-
Refining scrap supply (kt)	499	508	513	567	567	567	567	568
Electro-refined copper production (kt)	11,325	10,952	11,242	10,885	11,522	12,009	12,529	12,609
Total refined copper supply (kt)	14,872	14,486	14,696	14,140	14,816	15,367	15,723	15,659
ROW Copper consumption (kt)	11,843	11,640	10,901	11,340	12,004	12,769	13,299	13,800
Chg YoY	-0.6%	-1.7%	-6.4%	4.0%	5.9%	6.4%	4.1%	3.8%
Copper balance (kt)	2,599	2,646	2,595	2,800	2,812	2,598	2,424	1,860

Source: Wood Mackenzie, Company data, Credit Suisse estimates

LT copper price – Higher incentive needed deliver supply

We forecast a supply wave is currently nearing, but by 2025, we expect the peak of the supply wave will have passed, while demand should continue accelerating for decarbonisation, including EVs. By 2026, a new supply deficit may be exposed. New mine supply will be needed, but where from and what copper price will be needed?

The following is an extract from our note discussing long term copper prices ([Commodities](#))

Notes: LT copper price may need to increase to incentivise sufficient supply - 2 March 2021)

LT copper at \$3/lb has been appropriate, but is it enough for the future?

We approach LT pricing in our commodity forecasts by looking at incentive pricing required to maintain supply of each commodity over the long term. We avoid the need to speculate on supply and demand by setting the start of our LT pricing ten years away and considering it to be the average price over the subsequent three decades or so. Under this regime, LT prices need change only rarely, when long term demand trends look to be changing.

Our previous LT copper price was \$3/lb and in our opinion it was appropriate: \$3/lb was the expected future price used for the feasibility studies that allowed the Cobre Panama mine to be built, and the current construction of Quellaveco and QB2 to be approved, and is also the price used for the Josemaria feasibility study completed late last year, which Lundin says it intends to build. These are all large South American porphyry copper mines that really impact future supply.

However, long term demand for base metals now does look to be changing as the move towards decarbonisation accelerated over the course of 2020. At the start of last year, only the EU was committed to decarbonisation. But the second half of 2020 saw China commit to a carbon neutral target by 2060 – albeit after peaking in 2030 – closely followed by Japan and South Korea pledging carbon neutrality by 2050; and the US Biden administration has signed the Paris agreement and intends to decarbonise its power sector by 2030. These plans will need vast investment in renewable power, batteries, the grids and green hydrogen and EVs. The demand for the major base metals should be vast. The demand for copper should accelerate, especially driven by NEVs. So while \$3/lb has recently and is still appropriate to see big copper mines approved, we now investigate whether it will be sufficient to deliver sufficient new copper projects from 2025 if demand is accelerating.

We assess 7.1Mtpa of probable and possible new supply

We start with a list of projects that Wood Mackenzie has costed and determined the incentive price needed to work out certain IRRs. These are projects that may be classified as probable or only possible. We have weeded out the most unlikely projects such as La Granja, Namosi and Tampakan, and for the remainder pushed out the possible start dates to align with promoter's expectations, or those we consider most likely. We selected the projects we expect to start production before 2030, which is a list totaling 7.1Mtpa.

Many costed projects are high quality

The costed possible projects are not just a grab-bag of rubbish – deep, low grade and full of arsenic as dismissive claims by some copper bulls would suggest for new copper projects. Projects of poor quality often don't receive sufficient exploration to allow any cost estimate to be made, and we weeded out the most difficult.

In fact, a few of the projects may soon graduate from the list of possibles to construction. Josemaria in Argentina looks most likely as it is high in the Andean and apparently is in a mining friendly province. Its feasibility study was completed last year estimating an attractive IRR of 15.4% and a payback period of 3.8 years using a \$3/lb copper price, and Lundin says it intends to start construction next year, pending environmental approval. It has a capex bill of \$3.1bn, so the main activity for the next twelve month may be delivering the appropriate funding structure. SCC also has a number of very big projects in the costed list that it wants to start in Peru and Mexico, including Michilliquay, El Arco, & Los Chancas. However, in each case, the regulatory hurdle needs to be passed.

Regulatory approval is the biggest hurdle for new copper projects

From our survey of the projects, we would suggest that depth and grade are not the main issue facing new copper projects – it's the regulatory hurdle, especially when local communities occupy the land. The Andean copper belt in Chile and Argentina is in the high Atacama Desert where nothing grows and mining is well accepted, with water being the biggest issue. But as the copper belt trends north through Peru, it enters land occupied by farming communities, and hostility towards mining companies is common. This is a major issue for new projects as Peru hosts 1.2Mtpa of our costed list of projects. The North American copper belt has a long history of mining in Mexico and the southern US, but approvals are becoming more problematical as the recent setback on the planned land swap at RIO/BHP's Resolution project would suggest, and HudBay is appealing the suspension of its operating permit for Rosemont. Pebble is another project struggling for traction, but we assess any starting point as +2030 so remove it from consideration. Likewise, project approvals have stalled in PNG, which has put Newcrest's Golpu on ice.

We discuss the regulatory issues in more detail in relation to SCC's projects below.

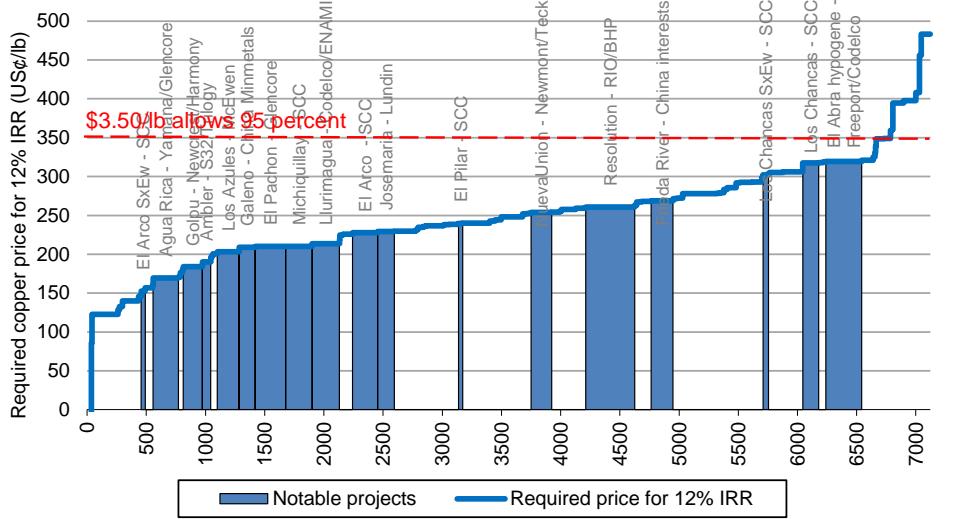
Economics of new projects

Seeking the copper price that generates an attractive IRR

15% IRR is often considered to be the return miners seek from new projects, although they also consider other metrics particularly payback periods. However, currently interest rates are so low that 15% is beginning to look like a super profit. Quellaveco and QB2 were approved with IRRs expected to be around 12% at a copper price of \$3/lb, accordingly, we accept 12% IRR as our starting point for examining required prices of new copper projects (Figure 128).

We currently use \$3/lb as our LT copper price, based on an incentive price methodology. Based on Wood Mackenzie's costings, \$3/lb looks valid, as it pulls in 80% of the costed projects. But there is also an argument that perhaps we need more than 80% given expected rapid demand growth to meet decarbonisation targets while some projects will stall on regulatory issues. A higher price such as \$3.50/lb would allow 95% of the costed projects to achieve an IRR of 12% on Wood Mackenzie's estimates.

Figure 128: Required copper price for 12% IRR from costed projects to 2030



Source: Wood Mackenzie, Credit Suisse estimates

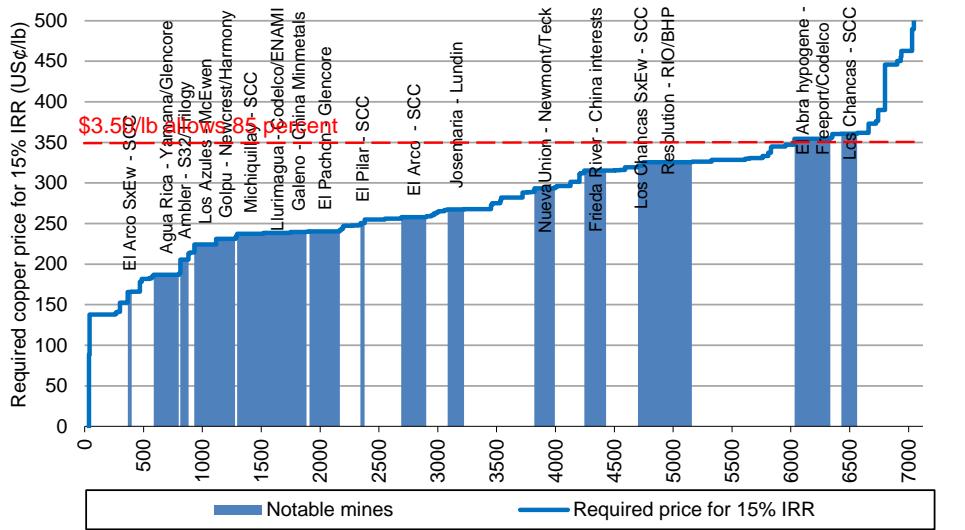
But inflation may ignite, driving up interest rates

Given we are looking at projects that might be approved mainly from 2024 to 2030, we cannot assume current economic conditions will prevail. There is also the risk in the next few years that inflation may rise, especially in response to the current stimulus and excess liquidity, and future

stimulus packages to assist decarbonisation. In fact the central banks are suppressing bond rates until inflation does climb to over 2% the target rate. If inflation revives and interest rates moved up to 4-5% in the next few years, IRRs might need to be 15% once more to incentivise new projects.

If 15% IRRs are required, then on Wood Mackenzie estimates, only 58% of the costed projects would make the cut with a \$3/lb price. \$3.50/lb would deliver a 15% IRR for 85% of the projects. \$3.60/lb would deliver 90% of the projects.

Figure 129: Required copper price for 15% IRR from costed projects to 2030



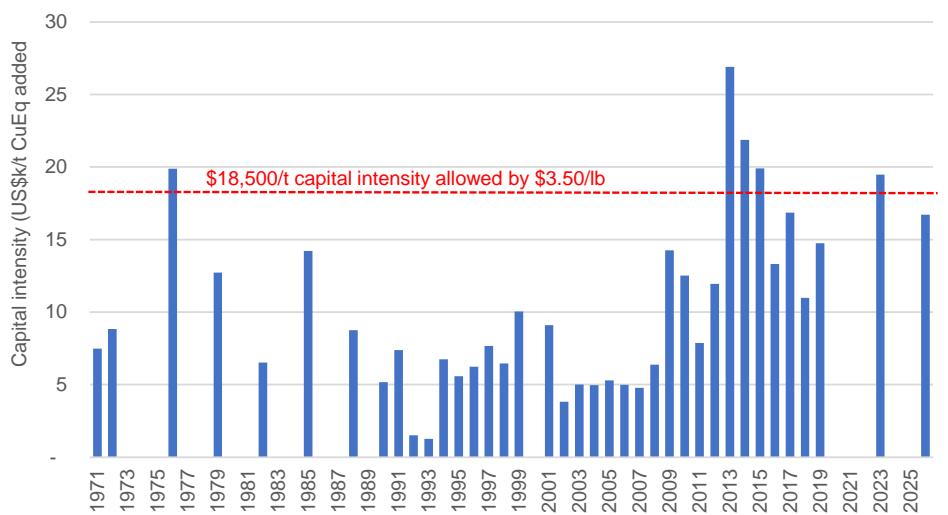
Source: Wood Mackenzie, Credit Suisse estimates

Generic copper modelling

\$3.50/lb copper price can support increasing capital intensity of mines

We also use a generic copper model of a hypothetical South American style porphyry copper deposit, to look at capital intensity assumptions. Our generic model is broadly a look-alike of Quellaveco, QB2 and Josemaría. The critical numbers in such a model are the C1 cash cost after deductions for byproduct credits, but including TC/RC charges, and the capital intensity – capex per tonne of copper capacity added.

Based on our sample of three mines that have C1 cash costs of \$1.10-\$1.39/lb, we use \$1.35/lb for our generic model. Capital intensity is more variable. Overall, capex for copper mines has tended to climb in real terms for greenfields projects in recent years (Figure 130). There is often a trade-off between capex and opex, and miners tend to favour opex, seeking to defray operating costs with larger machinery, greater throughput, and automation, all of which adds capital costs. Furthermore, Chile has reached the limits of its water supply so new mines now tend to require seawater desalination and pumping from the coast, which is costly.

Figure 130: Capital intensity of greenfields copper mill projects (real terms 2020 \$)

Source: Wood Mackenzie, Credit Suisse estimates

A copper price of \$3.00/lb would tend to support projects with capital intensity up to \$17,000 per tonne of recoverable copper, but IRRs would rapidly diminish at greater capital (Figure 131). \$3.50/lb should support more costly projects, potentially up to \$23,000 per tonne CuEq. This might allow more porphyry copper products to be approved, especially in Chile.

Figure 131: Typical porphyry copper model: IRR of 15% from capital intensity of \$18.5k

	12,500	14,000	15,500	17,000	18,500	20,000	21,500	23,000	24,500	
Copper Price (\$US\$/lb)	\$2.50	11.9%	10.6%	9.6%	8.7%	7.9%	7.2%	6.6%	6.0%	5.5%
	\$2.70	13.9%	12.5%	11.4%	10.4%	9.5%	8.7%	8.1%	7.5%	6.9%
	\$2.90	15.7%	14.2%	13.0%	11.9%	11.0%	10.2%	9.4%	8.8%	8.2%
	\$3.10	17.4%	15.9%	14.5%	13.4%	12.4%	11.5%	10.7%	10.0%	9.4%
	\$3.30	19.1%	17.4%	16.0%	14.8%	13.7%	12.8%	12.0%	11.2%	10.5%
	\$3.50	20.6%	18.9%	17.4%	16.1%	15.0%	14.0%	13.1%	12.3%	11.6%
	\$3.70	22.1%	20.3%	18.7%	17.4%	16.2%	15.2%	14.2%	13.4%	12.7%
	\$3.90	23.6%	21.6%	20.0%	18.6%	17.4%	16.3%	15.3%	14.4%	13.6%
	\$4.10	24.9%	22.9%	21.2%	19.8%	18.5%	17.3%	16.3%	15.4%	14.6%
	\$4.30	26.3%	24.2%	22.4%	20.9%	19.6%	18.4%	17.3%	16.4%	15.5%
	\$4.50	27.6%	25.4%	23.6%	22.0%	20.6%	19.4%	18.3%	17.3%	16.4%

Source: Credit Suisse estimates

Other expansions

Expansions tend to be lower cost and will likely contribute significant supply

The mines Wood Mackenzie has costed are only a subset of projects its lists as probable and possible totaling 16.2Mtpa to 2030, so there should be sufficient copper supply to meet demand. In our supply forecasts, we include only a small proportion of the list – 30% of the probable projects and around 8% of the possible projects, largely because we only forecast to 2024 and many of the listed possible projects have very optimistic, but unlikely timetables. Nevertheless, there are more projects available than the 7Mtpa that Wood Mackenzie costed.

These additional projects include expansions of existing mines, which is one of the key ways copper mine supply has always exceeded forecasts that show copper supply declining three to four years out. Expansions tend to be cheaper than greenfields mines as infrastructure is already in place, and lower risk given the ore attributes and costs are well established. However, expansions tend to be less visible than new mines during the all-important feasibility study stages, so it is difficult for data gatherers to collate a complete list of all the expansions that may occur. Known expansions are built into our forecasts, but others will undoubtedly arise.

Companies keen to sanction more projects

Freeport to expand Arizona copper mines

Among the list of possible new copper output are expansions of Freeport's Arizona copper mines. These now look to have advanced to probable. Freeport has recently said that it is likely to approve expansions at 'several' US copper mines in response to stronger copper prices and a stronger demand outlook on decarbonisation, adding around 115ktpa. Freeport did not specify which mines it would focus on, but it has eight to choose from, including the new Lone Star.

Southern Copper is bullish on copper.

In its 4Q 2020 results briefing, SCC pointed to three near-term small copper projects the it intends to construct in Mexico – Pilares, El Pilar and Buenavista zinc concentrator, which will each add 28-35ktpa of copper production from 2022-23; and one big project 245ktpa – El Arco – that it hopes to have enter production by 2028. In Peru, SCC hopes to initiate production (120ktpa) at Tia Maria in Peru by 2024; nominates Los Chancas (180ktpa) where it has completed an economic evaluation, to start by 2027; and it expects to start Michiquillay in 2028 at a production rate of 225ktpa. These big projects have formidable capex. El Arco is \$2.9bn, and Los Chancas and Michiquillay alone are expected to cost \$5.4bn. SCC guided to capex spend of over \$2bnpa from 2022.

But regulatory approvals may slow SCC's project plans

We would question the timing of some of these projects as community oppositions to miners in Peru is common. Tia Maria for instance was long stalled by militant community opposition. SCC was provided a construction permit by the Government, which was ratified in October 2020, but the Government asked SCC to gain a social licence from the local community before proceeding with construction. SCC says has been working with the local population and implemented welfare programs in education and healthcare, and promoted agriculture, livestock, manufacturing, fishing and tourism in the Tambo Valley. But we understand it still has no social licence and it remains to be seen whether its work in the Valley has swung the views of the populous. Likewise, we understand Los Chancas has faced community opposition. Michiquillay may be more promising - in an interview with Refinitiv in late-Feb, SCC's VP of Finance said that work with local communities around the Michiquillay project had been going "very well".

Peru: difficult to gain a social licence and uncertainty from the election

An election in Peru is due in April and June this year for the Government and President of Peru. From its 4Q-20 results comments, SCC seemed to indicate it hopes the next Government will provide support for mining projects, allowing it to advance its projects.

But there are risks of adverse outcomes for miners from the elections. Refinitiv reported that Peruvian presidential candidate Yohny Lescano, who is second in polls for the April 11 election, 'fired a warning to mining companies saying if elected he would look to make the State the ultimate owner of resources in the copper-rich Andean country. Lescano, in a conference with the foreign press, said that he would draw up a new register of where mining could take place and seek "equitable" prices for the country, which is the world's second-largest producer of copper.' He said 'while he was not in favor of nationalisation, Peru must always be the owner of its resources, which are currently leased off in concessions. "That must be modified," he said. "That's why they give ridiculous prices... I think this is a very important part of being able to start collecting more, to get better equitable income, just for Peru. That does not mean that it will be nationalized, far from it," he said. He added he was *against Southern Copper's huge Tia Maria copper project*, already halted for a decade by a social conflict.'

Mexico also becoming difficult for miners according to its Mining Chamber

There is also a negative regulatory environment for miners in Mexico, according to Fernando Alanis, the President of the Mexican Mining Chamber. Refinitiv reported that in an interview, 'Alanis praised signals coming from Mexico's new economy minister, Tatiana Clouthier, who oversees mining and with whom he earlier this month initiated talks aimed at boosting mining

activity. But he sharply criticized her boss, President Andres Manuel Lopez Obrador, who he says has painted a false picture of the sector. Alanis pointed to the president's claim that upwards of 80% of Mexican land has been given away in mining concessions, many to foreign firms, while the government's own data shows that only about 9% of land is covered, with only about a quarter of that in operation. Lopez Obrador's two-year-old government has also rejected project permits and halted new concessions, and the ruling party's head of the Senate economy committee recently proposed the nationalisation of the country's nascent lithium industry, which Alanis said is unlikely to pass but nevertheless represents a "terrible precedent." Alanis stressed that new concessions are needed to revert a decline in exploring for new commercial-grade deposits, and said Clouthier is open to the idea. "If new concessions aren't awarded, there's no exploration, and if there's no exploration, the future of mining is simply in doubt," he said'.

Lundin likes Josemaria project in Argentina

Lundin has flagged its intention to begin construction of Josemaria Project in Argentina, if the San Juan Province approves an environmental study this year, according to Refinitiv. Josemaria had a status of possible in Wood Mackenzie's compilation of mining projects, but now looks to have advanced to 'Probable' following the completion of the Feasibility Study in November. Lundin said the capex spend would be \$3.09bn and production begin in 2026 with an estimated life of 19 years. Josemaria is owned by Josemaria Resources, listed on the Vancouver stock exchange, but the Lundin Group has an influential 39% block, and may control the company.

There are obviously some hurdles remaining, - approval from Argentina, which seems likely if the State is as pro-mining as Lundin claims, and the source of capital, which we expect the company will work on over the next 12 months.

Josemaria's feasibility study used a copper price of \$3/lb, the same as Cobre Panama, QB2 and Quellaveco. It seems to remain the price companies are at with their expectations. Josemaria demonstrates that there remain attractive new Greenfield mines that can be started with that price.

Josemaria is a porphyry copper-gold deposit located in the Andean copper belt adjacent to the Chilean border. The feasibility study completed last November estimated a healthy IRR of 15.4% and payback of 3.8 years at a copper price of \$3/lb and \$1,500/oz for Au. Bulk tonnage mining of 152kt per day is planned to yield 136ktpa of copper, 231kozpa of gold and 1.2Mozpa of silver in clean concentrate over 19 years. The proven and probable mineral reserve of 1012Mt has diluted grades of 0.3% Cu, 0.22g/t Au and 0.94g/t Ag. The waste/ore ratio is 0.98:1 and recoveries were estimated as 85% for copper, Au-63%, and Ag-72%. The LOM cash cost is estimated as \$1.55/lb CuEq including sustaining capex, royalties and TC/RC charges.

Valuation Methodology and Risks

Target Price and Rating

Valuation Methodology and Risks: (12 months) for 29Metals (29M.AX)

Method: Our A\$2.65 Target Price is set at a 50/50 blend of our DCF-driven NPV (\$2.70) and 6.0x our CY22F EBITDA (\$2.56). Our 6.0x EBITDA multiple is broadly in line with global listed copper peers. Our DCF utilises an 8% (real) WACC and assumes copper prices of US\$4.18/lb in 2021, US\$3.40/lb in 2022, US\$3.20/lb in 2023 and US\$3.50/lb LT (real). For zinc we assume US\$1.25/lb in 2021, US\$1.16/lb in 2022, US\$1.13/lb in 2023 and US\$1.09/lb LT (real). Our LT AUDUSD assumption is 0.75. Our OUTPERFORM rating is premised on our view that 29Metals will successfully execute on its stated growth aspirations. We also believe the 29Metals portfolio offers good prospectivity for exploration beyond what is currently in the mine plan.

Risk: Key risks to our A\$2.65 Target Price and OUTPERFORM rating include 1) commodity/FX risk - the risk that AUD denominated commodity prices move adversely and erode 29M's revenue/margins. 2) Geotechnical risk - the risk that a seismic event at Golden Grove (which is now ~1.4km deep) causes a disruption to production. 3) Cost inflation - the risk that operating/capital costs escalate above commodity price growth and deteriorate project economics. 29M is also subject to inherent mining risks such as environmental and permitting.

Reference Appendix

Our new "**Total return forecast in perspective**" chart helps visualize Credit Suisse and consensus views of a company's 12-month return within the context of forecasting risks and its historical trading pattern:

12mth Volatility is calculated as the annualised standard deviation of weekly total return series over the past 12 months. It illustrates variability of stock returns; in other words, risk. The way to think about it is that one would rather take 10% forecast return from a stock that has 20% volatility, than from the stock that has 40% volatility. The shaded area shows the one standard deviation range based on past 12 months volatility. In statistical terms, once you make a number of brave assumptions, there is a 68% probability that the share price will end up inside that range in 12 months' time.

52wk Hi-Lo is maximum and minimum daily closing price over the past 52 weeks. It is often handy to know the price momentum especially when the stock is trading close to its highs and lows: Is the stock trading close to its peak? Is the momentum against the stock?

***Consensus is IBES consensus supplied by Refinitiv.** IBES is a survey of sell side research analysts, collecting a few dozen data points such as EPS, DPS, Sales, Target Price, ROE and so on. ***Mean is the average of target returns**, while the shaded area around the mean represents the range of estimates from the lowest to the highest estimate. This aids visualisation of a number of important factors such as: the range of analyst estimates; where Credit Suisse's estimates on this stock sit relative to consensus; and where the share price is relative to consensus mean and consensus range target.

Target return is calculated as capital gain plus forecast dividend yield (net) over the next 12 months. For "CS tgt" we have used Credit Suisse's target price and Credit Suisse forecast for 12-month forward dividend, grossed up for franking. For the consensus mean and range, we have used consensus target price and consensus dividend forecasts for 12 month forward.

Companies Mentioned (Price as of 04-Aug-2021)

29Metals (29M.AX, A\$2.45, OUTPERFORM[V], TP A\$2.65)
Aeris Resources (AIS.AX, A\$0.225)
Antofagasta (ANTO.L, 1529.0p)
Boliden (BOL.ST, Skr341.5)
Capstone Mining Corp. (CS.TO, C\$5.28)
Copper Mountain (CMMC.TO, C\$3.4)
Evolution Mining Limited (EVN.AX, A\$4.17)
First Quantum Minerals Ltd. (FM.TO, C\$25.29)
Freeport-McMoRan (FCX.N, \$35.65)
Hindustan Zinc Limited (HZNC.BO, Rs319.75)
Hudbay Minerals Inc. (HBM.TO, C\$8.5)
KGHM Polska Miedz S.A. (KGH.WA, zl198.25)
Lundin Mining Corp. (LUN.TO, CS11.06)
MMG Limited (1208.HK, HK\$3.84)
New Century Resources (NCZ.AX, A\$0.19)
Newcrest Mining (NCM.AX, A\$26.68)
OZ Minerals (OZL.AX, A\$22.94)
Sandfire Resources Limited (SFR.AX, A\$7.2)
Southern Copper Corporation (SCCO.N, \$64.66)
Taseko Mines Limited (TKO.TO, C\$2.16)
Turquoise Hill Resources Ltd (TRQ.TO, C\$19.65)

Disclosure Appendix

Analyst Certification

I, Patrick Collier, certify that (1) the views expressed in this report accurately reflect my personal views about all of the subject companies and securities and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this report.

As of December 10, 2012 Analysts' stock rating are defined as follows:

Outperform (O) : The stock's total return is expected to outperform the relevant benchmark* over the next 12 months.

Neutral (N) : The stock's total return is expected to be in line with the relevant benchmark* over the next 12 months.

Underperform (U) : The stock's total return is expected to underperform the relevant benchmark* over the next 12 months.

*Relevant benchmark by region: As of 10th December 2012, Japanese ratings are based on a stock's total return relative to the analyst's coverage universe which consists of all companies covered by the analyst within the relevant sector, with Outperforms representing the most attractive, Neutrals the less attractive, and Underperforms the least attractive investment opportunities. As of 2nd October 2012, U.S. and Canadian as well as European (excluding Turkey) ratings are based on a stock's total return relative to the analyst's coverage universe which consists of all companies covered by the analyst within the relevant sector, with Outperforms representing the most attractive, Neutrals the less attractive, and Underperforms the least attractive investment opportunities. For Latin America, Turkey and Asia (excluding Japan and Australia), stock ratings are based on a stock's total return relative to the average total return of the relevant country or regional benchmark (India - S&P BSE Sensex Index); prior to 2nd October 2012 U.S. and Canadian ratings were based on (1) a stock's absolute total return potential to its current share price and (2) the relative attractiveness of a stock's total return potential within an analyst's coverage universe. For Australian and New Zealand stocks, the expected total return (ETR) calculation includes 12-month rolling dividend yield. An Outperform rating is assigned where an ETR is greater than or equal to 7.5%; Underperform where an ETR less than or equal to 5%. A Neutral may be assigned where the ETR is between -5% and 15%. The overlapping rating range allows analysts to assign a rating that puts ETR in the context of associated risks. Prior to 18 May 2015, ETR ranges for Outperform and Underperform ratings did not overlap with Neutral thresholds between 15% and 7.5%, which was in operation from 7 July 2011.

Restricted (R) : In certain circumstances, Credit Suisse policy and/or applicable law and regulations preclude certain types of communications, including an investment recommendation, during the course of Credit Suisse's engagement in an investment banking transaction and in certain other circumstances.

Not Rated (NR) : Credit Suisse Equity Research does not have an investment rating or view on the stock or any other securities related to the company at this time.

Not Covered (NC) : Credit Suisse Equity Research does not provide ongoing coverage of the company or offer an investment rating or investment view on the equity security of the company or related products.

Volatility Indicator [V] : A stock is defined as volatile if the stock price has moved up or down by 20% or more in a month in at least 8 of the past 24 months or the analyst expects significant volatility going forward.

Analysts' sector weightings are distinct from analysts' stock ratings and are based on the analyst's expectations for the fundamentals and/or valuation of the sector* relative to the group's historic fundamentals and/or valuation:

Overweight : The analyst's expectation for the sector's fundamentals and/or valuation is favorable over the next 12 months.

Market Weight : The analyst's expectation for the sector's fundamentals and/or valuation is neutral over the next 12 months.

Underweight : The analyst's expectation for the sector's fundamentals and/or valuation is cautious over the next 12 months.

*An analyst's coverage sector consists of all companies covered by the analyst within the relevant sector. An analyst may cover multiple sectors.

Credit Suisse's distribution of stock ratings (and banking clients) is:

Global Ratings Distribution

Rating	Versus universe (%)	Of which banking clients (%)
Outperform/Buy*	55%	(31% banking clients)
Neutral/Hold*	33%	(23% banking clients)
Underperform/Sell*	10%	(21% banking clients)
Restricted	2%	

Please click [here](#) to view the MAR quarterly recommendations and investment services report for fundamental research recommendations.

*For purposes of the NYSE and FINRA ratings distribution disclosure requirements, our stock ratings of Outperform, Neutral, and Underperform most closely correspond to Buy, Hold, and Sell, respectively; however, the meanings are not the same, as our stock ratings are determined on a relative basis. (Please refer to definitions above.) An investor's decision to buy or sell a security should be based on investment objectives, current holdings, and other individual factors.

Important Global Disclosures

Credit Suisse's research reports are made available to clients through our proprietary research portal on CS PLUS. Credit Suisse research products may also be made available through third-party vendors or alternate electronic means as a convenience. Certain research products are only made available through CS PLUS. The services provided by Credit Suisse's analysts to clients may depend on a specific client's preferences regarding the frequency and manner of receiving communications, the client's risk profile and investment, the size and scope of the overall client relationship with the Firm, as well as legal and regulatory constraints. To access all of Credit Suisse's research that you are entitled to receive in the most timely manner, please contact your sales representative or go to <https://plus.credit-suisse.com>.

Credit Suisse's policy is to update research reports as it deems appropriate, based on developments with the subject company, the sector or the market that may have a material impact on the research views or opinions stated herein.

Credit Suisse's policy is only to publish investment research that is impartial, independent, clear, fair and not misleading. For more detail please refer to Credit Suisse's Policies for Managing Conflicts of Interest in connection with Investment Research: <https://www.credit-suisse.com/sites/disclaimers-ib/en/managing-conflicts.html>.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.

Credit Suisse has decided not to enter into business relationships with companies that Credit Suisse has determined to be involved in the development, manufacture, or acquisition of anti-personnel mines and cluster munitions. For Credit Suisse's position on the issue, please see <https://www.credit-suisse.com/media/assets/corporate/docs/about-us/responsibility/banking/policy-summaries-en.pdf>.

The analyst(s) responsible for preparing this research report received compensation that is based upon various factors including Credit Suisse's total revenues, a portion of which are generated by Credit Suisse's investment banking activities

Please refer to the firm's disclosure website at <https://rave.credit-suisse.com/disclosures/view/selectArchive> for the definitions of abbreviations typically used in the target price method and risk sections.

See the Companies Mentioned section for full company names

Credit Suisse currently has, or had within the past 12 months, the following as investment banking client(s): 29M.AX

Credit Suisse provided investment banking services to the subject company (29M.AX) within the past 12 months.

Credit Suisse has managed or co-managed a public offering of securities for the subject company (29M.AX) within the past 12 months.

Credit Suisse expects to receive or intends to seek investment banking related compensation from the subject company (29M.AX) within the next 3 months.

Credit Suisse or a member of the Credit Suisse Group is a market maker or liquidity provider in the securities of the following subject issuer(s): 29M.AX

A member of the Credit Suisse Group is party to an agreement with, or may have provided services set out in sections A and B of Annex I of Directive 2014/65/EU of the European Parliament and Council ("MiFID Services") to, the subject issuer (29M.AX) within the past 12 months.

For date and time of production, dissemination and history of recommendation for the subject company(ies) featured in this report, disseminated within the past 12 months, please refer to the link: <https://rave.credit-suisse.com/disclosures/view/report?i=636619&v=-ldyla9ae5uyrv8vd259hvt1n>.

Important Regional Disclosures

Singapore recipients should contact Credit Suisse AG, Singapore Branch for any matters arising from, or in connection with, this research report. Analysts who conduct site visits of covered issuers are not permitted to accept payment or reimbursement for travel expenses from the issuer for the site visit.

For Credit Suisse Securities (Canada), Inc.'s policies and procedures regarding the dissemination of equity research, please visit <https://www.credit-suisse.com/sites/disclaimers-ib/en/canada-research-policy.html>.

Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment.

To the extent any Credit Suisse equity research analyst employed by Credit Suisse International (a "UK Analyst") has interactions with a Spanish domiciled client of Credit Suisse AG or its affiliates, such UK Analyst will be acting for and on behalf of CSSSV, with respect only to the provision of equity research services to Spanish domiciled clients of Credit Suisse AG or its affiliates.

Pursuant to CVM Resolution No. 20/2021, of February 25, 2021, the author(s) of the report hereby certify(ies) that the views expressed in this report solely and exclusively reflect the personal opinions of the author(s) and have been prepared independently, including with respect to Credit Suisse. Part of the author(s)'s compensation is based on various factors, including the total revenues of Credit Suisse, but no part of the

compensation has been, is, or will be related to the specific recommendations or views expressed in this report. In addition, Credit Suisse declares that: Credit Suisse has provided, and/or may in the future provide investment banking, brokerage, asset management, commercial banking and other financial services to the subject company/companies or its affiliates, for which they have received or may receive customary fees and commissions, and which constituted or may constitute relevant financial or commercial interests in relation to the subject company/companies or the subject securities.

Credit Suisse Equity Research may make decisions about new and ongoing listed company coverage, including initiation, assumption or termination of coverage, based on various factors including: market capitalisation, trading volume, relevance to our institutional investor-clients, availability of information allowing formation and maintenance of a reasonable investment view, internal resourcing and availability of suitable analysts, or other factors of a regulatory nature as may be encountered from time to time.

In the preparation of Credit Suisse's research reports, Credit Suisse may have had assistance from the company (including but not limited to discussions with management of the company and visits to certain sites of the company).

This research report is authored by:

Credit Suisse Equities (Australia) Limited Patrick Collier ; Matthew Hope ; Alex Ren

To the extent this is a report authored in whole or in part by a non-U.S. analyst and is made available in the U.S., the following are important disclosures regarding any non-U.S. analyst contributors: The non-U.S. research analysts listed below (if any) are not registered/qualified as research analysts with FINRA. The non-U.S. research analysts listed below may not be associated persons of CSSU and therefore may not be subject to the FINRA 2241 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account.

Credit Suisse Equities (Australia) Limited Patrick Collier ; Matthew Hope ; Alex Ren

Important Credit Suisse HOLT Disclosures

The HOLT methodology does not assign ratings or a target price to a security. It is an analytical tool that involves use of a set of proprietary quantitative algorithms and warranted value calculations, collectively called the HOLT valuation model, that are consistently applied to all the companies included in its database. Third-party data (including consensus earnings estimates) are systematically translated into a number of default variables and incorporated into the algorithms available in the HOLT valuation model. The source financial statement, pricing, and earnings data provided by outside data vendors are subject to quality control and may also be adjusted to more closely measure the underlying economics of firm performance. These adjustments provide consistency when analyzing a single company across time, or analyzing multiple companies across industries or national borders. The default scenario that is produced by the HOLT valuation model establishes a warranted price for a security, and as the third-party data are updated, the warranted price may also change. The default variables may also be adjusted to produce alternative warranted prices, any of which could occur. The warranted price is an algorithmic output applied systematically across all companies based on historical levels and volatility of returns. Additional information about the HOLT methodology is available on request.

CFROI, CFROE, HOLT, HOLT Lens, HOLTfolio, "Clarity is Confidence" and "Powered by HOLT" are trademarks or registered trademarks of Credit Suisse Group AG or its affiliates in the United States and other countries.

HOLT is a corporate performance and valuation advisory service of Credit Suisse.

© 2021 Credit Suisse Group AG and its subsidiaries and affiliates. All rights reserved.

Important disclosures regarding companies that are the subject of this report are available by calling +1 (877) 291-2683. The same important disclosures, with the exception of valuation methodology and risk discussions, are also available on Credit Suisse's disclosure website at <https://rave.credit-suisse.com/disclosures>. For valuation methodology and risks associated with any recommendation, price target, or rating referenced in this report, please refer to the disclosures section of the most recent report regarding the subject company.

This report is produced by subsidiaries and affiliates of Credit Suisse operating under its Sustainability, Research & Investment Solutions Division. For more information on our structure, please use the following link: <https://www.credit-suisse.com/who-we-are>. This report may contain material that is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would subject Credit Suisse or its affiliates ("CS") to any registration or licensing requirement within such jurisdiction. All material presented in this report, unless specifically indicated otherwise, is under copyright to CS. None of the material, nor its content, nor any copy of it, may be altered in any way, transmitted to, copied or distributed to any other party, without the prior express written permission of CS. All trademarks, service marks and logos used in this report are trademarks or service marks or registered trademarks or service marks of CS or its affiliates. The information, tools and material presented in this report are provided to you for information purposes only and are not to be used or considered as an offer or the solicitation of an offer to sell or to buy or subscribe for securities or other financial instruments. CS may not have taken any steps to ensure that the securities referred to in this report are suitable for any particular investor. CS will not treat recipients of this report as its customers by virtue of their receiving this report. The investments and services contained or referred to in this report may not be suitable for you and it is recommended that you consult an independent investment advisor if you are in doubt about such investments or investment services. Nothing in this report constitutes investment, legal, accounting or tax advice, or a representation that any investment or strategy is suitable or appropriate to your individual circumstances, or otherwise constitutes a personal recommendation to you. Please note in particular that the bases and levels of taxation may change. Information and opinions presented in this report have been obtained or derived from sources believed by CS to be reliable, but CS makes no representation as to their accuracy or completeness. CS accepts no liability for loss arising from the use of the material presented in this report, except that this exclusion of liability does not apply to the extent that such liability arises under specific statutes or regulations applicable to CS. This report is not to be relied upon in substitution for the exercise of independent judgment. CS may have issued, and may in the future issue, other communications that are inconsistent with, and reach different conclusions from, the information presented in this report. Those communications reflect the different assumptions, views and analytical methods of the analysts who prepared them and CS is under no obligation to ensure that such other communications are brought to the attention of any recipient of this report. Some investments referred to in this report will be offered solely by a single entity and in the case of some investments solely by CS, or an associate of CS or CS may be the only market maker in such investments. Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied, is made regarding future performance. Information, opinions and estimates contained in this report reflect a judgment at its original date of publication by CS and are subject to change without notice. The price, value and income from any of the securities or financial instruments mentioned in this report can fall as well as rise. The value of securities and financial instruments is subject to exchange rate fluctuation that may have a positive or adverse effect on the price or income of such securities or financial instruments. Investors in securities such as ADR's, the values of which are influenced by currency volatility, effectively assume this risk. Structured securities are complex instruments, typically involve a high degree of risk and are intended for sale only to sophisticated investors who are capable of understanding and assuming the risks involved. The market value of any structured security may be affected by changes in economic, financial and political factors (including, but not limited to, spot and forward interest and exchange rates), time to maturity, market conditions and volatility, and the credit quality of any issuer or reference issuer. Any investor interested in purchasing a structured product should conduct their own investigation and analysis of the product and consult with their own professional advisors as to the risks involved in making such a purchase. Some investments discussed in this report may have a high level of volatility. High volatility investments may experience sudden and large falls in their value causing losses when that investment is realised. Those losses may equal your original investment. Indeed, in the case of some investments the potential losses may exceed the amount of initial investment and, in such circumstances, you may be required to pay more money to support those losses. Income yields from investments may fluctuate and, in consequence, initial capital paid to make the investment may be used as part of that income yield. Some investments may not be readily realisable and it may be difficult to sell or realise those investments, similarly it may prove difficult for you to obtain reliable information about the value, or risks, to which such an investment is exposed. This report may provide the addresses of, or contain hyperlinks to, websites. Except to the extent to which the report refers to website material of CS, CS has not reviewed any such site and takes no responsibility for the content contained therein. Such address or hyperlink (including addresses or hyperlinks to CS's own website material) is provided solely for your convenience and information and the content of any such website does not in any way form part of this document. Accessing such website or following such link through this report or CS's website shall be at your own risk.

This report is issued and distributed in **European Union (except Germany and Spain)**: by Credit Suisse Securities (Europe) Limited, One Cabot Square, London E14 4QJ, England, which is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority; **Spain**: Credit Suisse Securities, Sociedad de Valores, S.A. ("CSSSV") regulated by the Comisión Nacional del Mercado de Valores; **Germany**: Credit Suisse (Deutschland) Aktiengesellschaft regulated by the Bundesanstalt fuer Finanzdienstleistungsaufsicht ("BaFin"); **United States**: Credit Suisse Securities (USA) LLC; **Canada**: Credit Suisse Securities (Canada), Inc.; **Switzerland**: Credit Suisse AG; **Brazil**: Banco de Investimentos Credit Suisse (Brasil) S.A or its affiliates; **Mexico**: Banco Credit Suisse (México), S.A., Institución de Banca Múltiple, Grupo Financiero Credit Suisse (México) and Casa de Bolsa Credit Suisse (México), S.A. de C.V., Grupo Financiero Credit Suisse (México) ("Credit Suisse Mexico"). This document has been prepared for information purposes only and is exclusively distributed in Mexico to Institutional Investors. Credit Suisse Mexico is not responsible for any onward distribution of this report to non-institutional investors by any third party. The authors of this report have not received payment or compensation from any entity or company other than from the relevant Credit Suisse Group company employing them; **Japan**: by Credit Suisse Securities (Japan) Limited, Financial Instruments Firm, Director-General of Kanto Local Finance Bureau ("Kinsho") No. 66, a member of Japan Securities Dealers Association, The Financial Futures Association of Japan, Japan Investment Advisers Association, Type II Financial Instruments Firms Association. This report has been prepared and issued for distribution in Japan to Credit Suisse's clients, including institutional investors; **Hong Kong**: Credit Suisse (Hong Kong) Limited; **Australia**: Credit Suisse Equities (Australia) Limited; **Thailand**: Credit Suisse Securities (Thailand) Limited, regulated by the Office of the Securities and Exchange Commission, Thailand, having registered address at 990 Abdulrahim Place, 27th Floor, Unit 2701, Rama IV Road, Silom, Bangkok, Bangkok10500, Thailand, Tel. +66 2614 6000; **Malaysia**: Credit Suisse Securities (Malaysia) Sdn Bhd; **Singapore**: Credit Suisse AG, Singapore Branch; **India**: Credit Suisse Securities (India) Private Limited (CIN no.U67120MH1996PTC104392) regulated by the Securities and Exchange Board of India as Research Analyst (registration no. INH 0000001030) and as Stock Broker (registration no. INZ000248233), having registered address at 9th Floor, Ceejay House, Dr.A.B. Road, Worli - 18, India, T. +91-22 6777 3777; **South Korea**: Credit Suisse Securities (Europe) Limited, Seoul Branch; **Taiwan**: Credit Suisse AG Taipei Securities Branch; **Indonesia**: PT Credit Suisse Sekuritas Indonesia; **Philippines**: Credit Suisse Securities (Philippines) Inc., and elsewhere in the world by the relevant authorised affiliate of the above.

Additional Regional Disclaimers

Australia: Credit Suisse Securities (Europe) Limited ("CSSEL") and Credit Suisse International ("CSI") are authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority ("FCA") and the Prudential Regulation Authority under UK laws, which differ from Australian Laws. CSSEL and CSI do not hold an Australian Financial Services Licence ("AFSL") and are exempt from the requirement to hold an AFSL under the Corporations Act (Cth) 2001 ("Corporations Act") in respect of the financial services provided to Australian wholesale clients (within the meaning of section 761G of the Corporations Act) (hereinafter referred to as "Financial Services"). This material is not for distribution to retail clients and is directed exclusively at Credit Suisse's professional clients and eligible counterparties as defined by the FCA, and wholesale clients as defined under section 761G of the Corporations Act. Credit Suisse (Hong Kong) Limited ("CSHK") is licensed and regulated by the Securities and Futures Commission of Hong Kong under the laws of Hong Kong, which differ from Australian laws. CSHK does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. Investment banking services in the United States are provided by Credit Suisse Securities (USA) LLC, an affiliate of Credit Suisse Group. CSSU is regulated by the United States Securities and Exchange Commission under United States laws, which differ from Australian laws. CSSU does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. Credit Suisse Asset Management LLC (CSAM) is authorised by the Securities and Exchange Commission under US laws, which differ from Australian laws. CSAM does not hold an AFSL and is exempt from the requirement to hold an AFSL under the Corporations Act in respect of providing Financial Services. This material is provided solely to Institutional Accounts (as defined in the FINRA rules) who are Eligible Contract Participants (as defined in the US Commodity Exchange Act). Credit Suisse Equities (Australia) Limited (ABN 35 068 232 708) ("CSEAL") is an AFSL holder in Australia (AFSL 237237).

Malaysia: Research provided to residents of Malaysia is authorised by the Head of Research for Credit Suisse Securities (Malaysia) Sdn Bhd, to whom they should direct any queries on +603 2723 2020.

Singapore: This report has been prepared and issued for distribution in Singapore to institutional investors, accredited investors and expert investors (each as defined under the Financial Advisers Regulations) only, and is also distributed by Credit Suisse AG, Singapore Branch to overseas investors (as defined under the Financial Advisers Regulations). Credit Suisse AG, Singapore Branch may distribute reports produced by its foreign entities or affiliates pursuant to an arrangement under Regulation 32C of the Financial Advisers Regulations. Singapore recipients should contact Credit Suisse AG, Singapore Branch at +65-6212-2000 for matters arising from, or in connection with, this report. By virtue of your status as an institutional investor, accredited investor, expert investor or overseas investor, Credit Suisse AG, Singapore Branch is exempted from complying with certain compliance requirements under the Financial Advisers Act, Chapter 110 of Singapore (the "FAA"), the Financial Advisers Regulations and the relevant Notices and Guidelines issued thereunder, in respect of any financial advisory service which Credit Suisse AG, Singapore Branch may provide to you.

EU: This report has been produced by subsidiaries and affiliates of Credit Suisse operating under its Sustainability, Research & Investment Solutions Division.

In jurisdictions where CS is not already registered or licensed to trade in securities, transactions will only be effected in accordance with applicable securities legislation, which will vary from jurisdiction to jurisdiction and may require that the trade be made in accordance with applicable exemptions from registration or licensing requirements.

This material is issued and distributed in the U.S. by CSSU, a member of NYSE, FINRA, SIPC and the NFA, and CSSU accepts responsibility for its contents. Clients should contact analysts and execute transactions through a Credit Suisse subsidiary or affiliate in their home jurisdiction unless governing law permits otherwise.

CS may provide various services to US municipal entities or obligated persons ("municipalities"), including suggesting individual transactions or trades and entering into such transactions. Any services CS provides to municipalities are not viewed as "advice" within the meaning of Section 975 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. CS is providing any such services and related information solely on an arm's length basis and not as an advisor or fiduciary to the municipality. In connection with the provision of the any such services, there is no agreement, direct or indirect, between any municipality (including the officials, management, employees or agents thereof) and CS for CS to provide advice to the municipality. Municipalities should consult with their financial, accounting and legal advisors regarding any such services provided by CS. In addition, CS is not acting for direct or indirect compensation to solicit the municipality on behalf of an unaffiliated broker, dealer, municipal securities dealer, municipal advisor, or investment adviser for the purpose of obtaining or retaining an engagement by the municipality or in connection with Municipal Financial Products, the issuance of municipal securities, or of an investment adviser to provide investment advisory services to or on behalf of the municipality. If this report is being distributed by a financial institution other than Credit Suisse AG, or its affiliates, that financial institution is solely responsible for distribution. Clients of that institution should contact that institution to effect a transaction in the securities mentioned in this report or require further information. This report does not constitute investment advice by Credit Suisse to the clients of the distributing financial institution, and neither Credit Suisse AG, its affiliates, and their respective officers, directors and employees accept any liability whatsoever for any direct or consequential loss arising from their use of this report or its content. No information or communication provided herein or otherwise is intended to be, or should be construed as, a recommendation within the meaning of the US Department of Labor's final regulation defining "investment advice" for purposes of the Employee Retirement Income Security Act of 1974, as amended and Section 4975 of the Internal Revenue Code of 1986, as amended, and the information provided herein is intended to be general information, and should not be construed as, providing investment advice (impartial or otherwise).

Copyright © 2021 CREDIT SUISSE AG and/or its affiliates. All rights reserved.

When you purchase non-listed Japanese fixed income securities (Japanese government bonds, Japanese municipal bonds, Japanese government guaranteed bonds, Japanese corporate bonds) from CS as a seller, you will be requested to pay the purchase price only.