

# Marengo Mining Ltd.

MRN-T: C\$0.02

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**NEUTRAL, Speculative Risk**  
 Dundee target: N/A

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## Progressing one of the Best Undeveloped Copper Projects

	New	Last
Recommendation:	Neutral	--
Target per share	N/A	--
Risk	Speculative	--
Projected return	--	--
Target/NAV multiple	--	--
NAV/share	\$0.24	--
<b>Share Data</b>		
Shares Outstanding - Basic	1,137.9 mm	
Shares Outstanding - FD	1,203.9 mm	
Avg. Trading Volume - One month	0.8 mm	
52-week high/low	H-\$0.19 L-\$0.01	
Market Cap (mm)	\$24	
Net Debt (net cash) (mm)	(\$9)	
EV (mm)	\$15	
Dividend per share	\$0.0	
Dividend yield	0.0%	
<b>Operations</b>		
Locations	Papua New Guinea	
Main commodity(ies)	Copper	
Resource	5.0B lbs Cu	
Yrly Production (Cu)	211mm lbs	
Copper Grade	0.40%	
Start Date (Est.)	2018	
Initial Capex	\$2B	
Avg. Cash Costs (LOM)	\$1.30/lb Cu	
NAV/share	\$0.24	
P/NAV	0.08x	
Discount Rate	10.0%	

All figures are in CAD\$ unless otherwise stated  
 Year end June 30th

Source: Company Reports, Factset, DCM

### MRN: Price/Volume Chart



Source: Factset

### Company Description

Marengo Mines Ltd., (MRN-T, MMC-A), is a recently re-domiciled Toronto-based mining company focused on developing its large Yandera copper-molybdenum-gold project in Papua New Guinea.

### EXECUTIVE SUMMARY

**Conclusion:** As the market to finance development projects held by juniors remains very difficult, we believe Marengo represents a rare find. With its large Yandera copper project and an experienced Chinese partner (China Non-ferrous) that has provided the company with fixed EPC pricing while committing 70% of capital requirements, we believe that Yandera is a project that can be financed and potentially built without large capex overruns. Further, MRN has already secured a largely-functional port facility in Madang, PNG (which will benefit from its proximity to China).

MRN has traded down significantly over the last 6 months, losing over 80% of its market cap due to ongoing weakness in the junior mining space. Power negotiations in PNG resulting in a delayed feasibility study also contributed to the stock's free fall. Further, the company is still considering deep sea tailings disposal which is often difficult to permit. However, last week MRN announced progress on power negotiations and given life to the feasibility study. We believe that MRN now offers an interesting entry opportunity, but is still very risky. As such **we are initiating coverage on MRN with a NEUTRAL rating, Speculative Risk, and no target price.**

### Strong Partners- and the Ability to Access Capital

We consider MRN's access to capital a competitive advantage as it is something that many comparable junior developers don't have. In 2011 MRN signed a Memorandum of Understanding ("MoU") with China Nonferrous Metal Industry's Foreign Engineering and Construction Co Ltd ("NFC"), for the financing, construction and development of Yandera. NFC has agreed to fund 70% of the capital required for Yandera through debt (the other 30% will have to be raised by MRN). With its ability to largely "self-finance" we believe that Yandera will enter production, after its 2-year development, in 2018. At full production, we estimate that Yandera will produce over 210MM lbs of copper in concentrate per year over the LOM for ~20 years.

### Risks

MRN is a one-asset company with only its Yandera asset, and as such, has not diversified its project-related risks. Copper price fluctuations will also affect MRN's cash flows once Yandera is in production as ~80% of revenue is projected to come from copper. Although MRN has locked in the majority of capex overrun for Yandera with fixed EPC pricing, we consider financing to be a risk as the company will still need to raise ~\$600MM. Also, Yandera's location in PNG is a risk as the country is a developing nation with politically-driven risk elements.

**Capex Locked in - Low inflation risk**

As part of their MoU with Marengo, NFC has undertaken the key engineering studies and design for Yandera's processing facilities. Additionally, detailed engineering for mine infrastructure and port facilities were submitted to NFC and, in February 2013, Marengo received fixed Engineering Procurement and Construction ("EPC") pricing from their Chinese partners. In an environment of capex inflation, the fixed EPC pricing establishes a limit to the amount of capital MRN will require for the Yandera project. EPC pricing for processing facilities, mine infrastructure and port facilities has been set by NFC at US\$1.42 billion. Pricing for other infrastructure, including fleet, pre-strip, and power line is subject to the completion of the pending feasibility study; these items are estimated to cost between \$300-400 million for a total capex of \$1.7-1.85 billion. We note that the pricing is based on the assumption of an increase to the initial processing rate to 30Mtpa and that the \$1.7-1.85 billion capex number remains below MRN's initial guidance for ~\$2 billion.

**Favorable Comparison to Producing Assets**

When compared to other large copper projects both in production and development stages, we see that Yandera is well positioned with almost 10B lbs of copper equivalent resource (at ~0.4% Cu grade) and further exploration potential. With Yandera, MRN currently sits just outside the "sweet spot" of world-class producing copper assets due to slightly lower grades. However, we note that Yandera is of better quality than other pipeline projects based on its partnership and size.

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**MRN: VALUATION AND RECOMMENDATION****Marengo Holds a Rare World-Class Copper Project with the Potential to "Self Finance".**

As the capital markets remain largely closed for juniors trying to finance development projects, we believe Marengo represents a rare opportunity. With its large Yandera copper project and an experienced Chinese partner who has provided the company with fixed EPC pricing and committed to 70% of capital requirements for the project (pricing for mine infrastructure and port facilities has been set by NFC at US\$1.42 billion), we believe MRN represents a company that is much more likely than most to see its project to fruition. Marengo also boasts an operating team that we believe is capable of seeing a large project through feasibility and into production. Our neutral rating is based on Yandera's early-stage nature, lack of feasibility study and the high level of risk involved with the project's development.

**MRN's Peers**

Name	Ticker	Main Commodities	Price 11-Oct-13	MCap (US\$M)	Rating	Target	Implied return	NAV (\$/sh)	Price to NAV
<b>BASE METALS - Developers</b>									
Augusta Resource	AZC-T	Cu, Ag, Mo	C\$1.95	\$291	SELL	C\$2.30	18%	C\$4.99	0.39x
Candente Copper	DNT-T	Cu, Au, Ag	C\$0.24	\$32	SELL	C\$0.50	108%	C\$1.73	0.14x
Canadian Zinc	CZN-T	Zn, Pb	C\$0.49	\$86	BUY	C\$0.85	75%	C\$0.85	0.57x
Nevada Copper	NCU-T	Cu, Ag, Au	C\$2.05	\$180	BUY	C\$5.25	156%	C\$7.35	0.28x
Quaterra Resources	QTA-T	Cu, Ag	C\$0.15	\$24	NEUTRAL	C\$0.20	33%	C\$0.28	0.54x
Rathdowney Resour	RTH-T	Zn, Pb	C\$0.29	\$25	NEUTRAL	NA	NA	C\$0.45	0.64x
TriAusMin Ltd	TOR-T	Zn, Pb	C\$0.05	\$11	BUY	-	NA	C\$0.29	0.16x
Zazu Metals	ZAZ-T	Zn, Ag	C\$0.63	\$30	NEUTRAL	NA	NA	C\$1.01	0.62x
<b>Copper Developers Average</b>									<b>0.34x</b>

Source: Company Reports, Factset, DCM

**MRN is currently trading at 0.08x NAV, a discount to peers at 0.36x. We are initiating coverage on MRN with a NEUTRAL rating, Speculative Risk, and no target price.**

## NAV Breakdown

We provide our NAV estimate breakdown for Marengo below:

### Net Asset Value Breakdown

Assets (10% discount rate)	\$MM	\$/sh	%
<b>Yandera (100%)</b>	\$281.7	\$0.23	98.5%
Subtotal - Assets (US\$)	\$281.7	\$0.23	98.5%
Working Capital	\$4.3	\$0.00	1.5%
Total debt	\$0.0	\$0.00	0.0%
Asset Retirement	\$0.0	\$0.00	0.0%
Subtotal - Balance sheet items (US\$)	\$4.3	\$0.00	1.5%
Net Asset Value - Basic (C\$)	\$286.0	\$0.24	
Net Asset Value - FD (C\$)	<b>\$286.0</b>	<b>\$0.24</b>	

Source: Marengo Mines Ltd., Dundee Securities

Details included in our NAV are the following:

- 100% ownership of the Yandera project (no value attributed to potential iron or silver revenue) with an NPV of \$282MM or \$0.23/share
- ~\$7.5MM in cash+term deposits and working capital of \$4.3MM
- \$25MM in convertible debt with Sentient Group (\$10M loan agreement and \$15M in a convertible debenture)
- Basic share count of 1,137MM and 1,204MM shares on a fully diluted basis

Central to our valuation of MRN are our commodity prices assumptions which we provide below. For more information on our base metal pricing assumptions, please see our September 4th note titled "TOP 10 Reasons the Next Up-Cycle for Base Metals has Begun". We believe that our long term copper price assumption is conservative given what we see as positive fundamentals in the market (see the section below titled Copper Market Overview-Supply Side Remains the Key).

### Dundee Commodity Price Forecast

	2012	2013	2014	2015	2016	2017	LT
<b>Copper</b>	\$3.61	\$3.24	\$3.30	\$3.50	\$3.50	\$3.50	\$2.75
<b>Molybdenum</b>	\$12.78	\$10.38	\$11.00	\$11.00	\$11.00	\$11.00	\$11.00
<b>Gold</b>	\$1,668	\$1,399	\$1,378	\$1,425	\$1,375	\$1,325	\$1,325
<b>Silver</b>	\$31.13	\$27.80	\$22.95	\$23.75	\$23.00	\$22.00	\$22.00

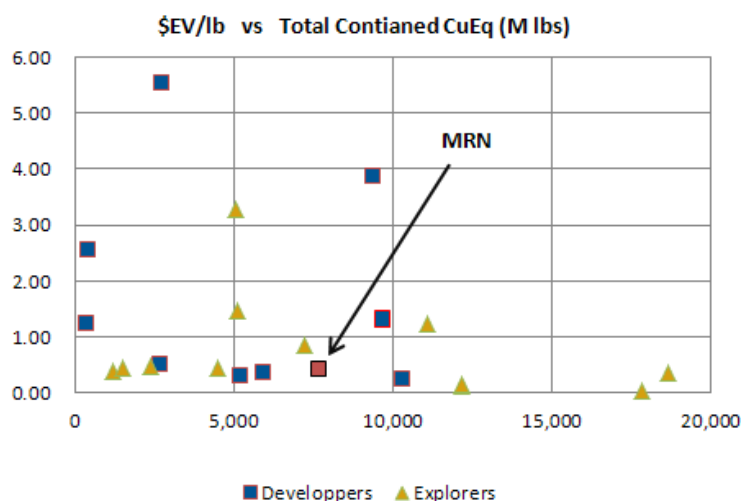
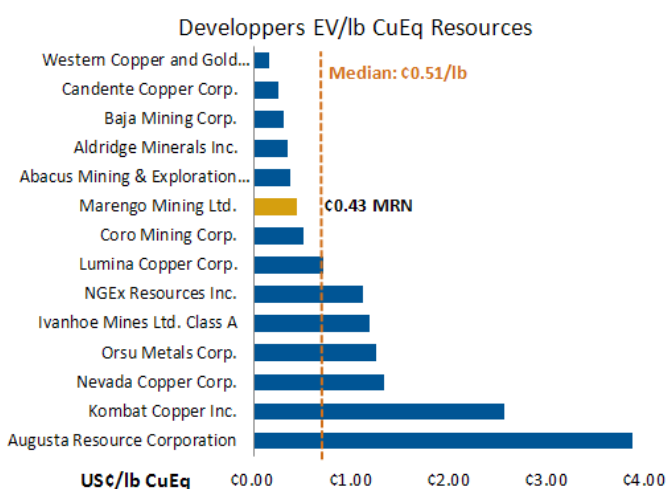
Source: Dundee Securities

### Peer Comparison

MRN trades well below its peers on an EV/lb basis at \$0.0043/lb of CuEq compared the developer average of \$0.015/lb. We believe that once a feasibility study is released, MRN should see a re-rating. NGEx (NGQ-T, BUY rated, no target) with a development stage project in Chile, and a slightly larger total resource base than MRN is trading at \$0.011 /lb. Using the same multiple seen for NGQ would imply a \$0.07/share valuation for MRN.

### Resource-Based Valuation: Peer Comparison

Name	Ticker	Analyst	Key Operations Country	Price (US\$) 18-Oct-13	Shares o/s (mm)	Market Cap (US\$ mm)	EV (US\$ mm)	Resources (Mt)	Cu Grade (%)	Cont. CuEq (mm lbs)	EV/CuEq (US¢/lb)	
<b>Developers</b>												
Abacus Mining & Exploration Corp.	AME-TSX	-	Canada	\$0.11	214	\$23	\$22	586	0.32%	5,932	¢0.37	
Augusta Resource Corporation	AZC-TSX	JG	US	\$1.94	144	\$279	\$362	846	0.41%	9,387	¢3.86	
Baja Mining Corp.	BAJ-TSX	-	Mexico	\$0.03	340	\$10	\$15	208	0.65%	5,201	¢0.29	
Candente Copper Corp.	DNT-TSX	DC	Peru	\$0.22	122	\$27	\$25	910	0.44%	10,293	¢0.25	
Coro Mining Corp.	COP-TSX	DC	Argentina, Chile	\$0.11	138	\$15	\$13	196	0.48%	2,689	¢0.50	
Emed Mining Public Limited	EMED-LON	-	Spain	\$0.12	1,186	\$139	\$152	229	0.54%	2,743	¢5.52	
Ivanhoe Mines Ltd. Class A	IVN-TSX	-	DRC, South Africa	\$2.33	529	\$1,236	\$1,082	1,421	1.59%	92,155	¢1.17	
Kombat Copper Inc.	KBT-TSX	DC	Namibia	\$0.08	82	\$7	\$11	5	3.10%	431	¢2.54	
Lumina Copper Corp.	LCC-TSX	-	Argentina, Peru	\$5.82	44	\$254	\$248	3,086	0.42%	35,367	¢0.70	
Marengo Mining Ltd.	MRN-TSX	JG	Papua New Guinea	\$0.02	1,138	\$22	\$33	833	0.35%	7,657	¢0.43	
Nevada Copper Corp.	NCU-TSX	JG	US	\$1.94	81	\$157	\$128	925	0.42%	9,678	¢1.32	
NGEx Resources Inc.	NGQ-TSX	DC	Chile	\$1.77	169	\$299	\$276	2,285	0.36%	25,105	¢1.10	
Northern Dynasty Minerals Ltd.	NDM-TSX	-	US (Alaska)	\$1.46	95	\$139	\$115	3,989	0.41%	66,212	¢0.17	
Orsu Metals Corp.	OSU-TSX	-	Kazakhstan	\$0.06	183	\$12	\$4	9	1.67%	358	¢1.24	
Western Copper and Gold Corp.	WRN-TSX	-	Canada	\$0.69	94	\$65	\$36	2,834	0.16%	25,186	¢0.14	
									<b>Average</b>	<b>0.73%</b>	<b>18,739</b>	<b>¢1.25</b>



Source: Dundee Securities, Company Documents

## Short Term Catalysts for Value

We view the following as the potentially major catalysts for MRN stock. The timeline given is based on our estimates:

- Power Solution (H2/2013)
- Yandera feasibility study and resource/reserve release (H1/2014)
- EPC contract preparation (2014)
- Mining and environmental approvals (Q1/2014)
- Project financing completion (2015)
- Construction (2016)
- Commissioning (2017)
- Commercial production (2018)

### Our Estimate for MRN's Development Schedule



Source: Marengo Mines Ltd., DCM

### M&A - Could be sold once de-risked

We also highlight that MRN could be a likely M&A candidate. Although the top 5 shareholders own ~55% of the company, as a solid long-life copper project, we believe that Yandera could be attractive to companies looking for a long term investment for their copper portfolio once MRN has further de-risked the asset and that the shareholders would welcome this sort of exit opportunity. In the table below, we show recent takeovers in the copper space and the P/NAV multiples implied by the transactions. Using the average P/NAV takeout multiple of 1.14x would imply a value of \$0.29/share from MRN, or a 1350% premium to current trading levels.

#### Recent Copper Transactions

Announcement Date	Acquirer	Target	Transaction Value (US\$MM)	Consensus P/NAV
23-Nov-12	Lundin	Eagle	\$325	0.90x
24-Nov-12	Capstone	Pinto Valley	\$650	0.87x
25-Nov-12	First Quantum	Inmet	\$2,500	0.82x
6-Dec-11	KGHM Polska	Quadra FNX	\$2,363	0.70x
15-Jun-11	Nyrstar	Breakwater	\$601	0.90x
25-Apr-11	Barrick	Equinox	\$7,842	1.30x
30-Nov-09	Sojitz	25% of Gibraltar (TKO)	\$183	1.60x
1-Apr-09	Minmetals	OZ Minerals	\$1,354	0.50x
3-Jul-07	Teck Cominco	Aur Resources	\$4,091	1.90x
27-Jun-07	Yamana	Northern Orion	\$891	1.20x
18-Nov-06	Freeport-McMoRan	Phelps Dodge	\$24,732	1.30x
	<b>Average</b>		<b>\$4,139</b>	<b>1.09x</b>
	<b>Median</b>		<b>\$1,354</b>	<b>0.90x</b>

Source: Company Reports, DCM

If a take-over scenario is used similar to where the Pinto Valley took place; using a 0.87x NAV value would give a price of ~\$0.22/share (using a 0.7x NAV multiple similar to the Quadra FNX transaction would give a value of \$0.18/share). Even if take-under values are used for MRN, the implied prices are still significantly higher than MRN's current trading levels.

## Financing Options

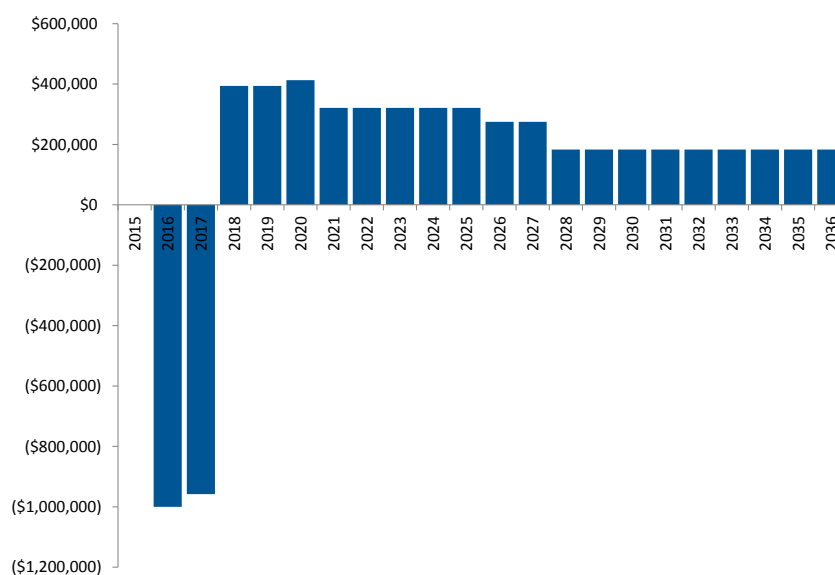
We estimate that it will cost MRN roughly \$2 billion to bring the Yandera project into production (the company estimates \$1.70-1.85 billion of which \$1.4 billion has been fixed for EPC). NFC has agreed to fund 70% of total capex requirements with debt (~\$1.4 billion), this leaves MRN with ~\$600MM left to finance. Scenarios for this financing could include more debt (probably mezzanine), equity, and some form of offtake or streaming deal. Most likely MRN will not issue equity at current levels given the high degree of potential dilution that would be involved. We note that, as is often the case with Australian-listed stocks, MRN has a high number of shares outstanding which could lead to a share consolidation.

- **Equity:** We believe that, although equity markets are currently tough, MRN's principal shareholders would look to maintain their proportional ownership during a potential raise which could account for up to 40% of the issue.
- **Debt:** It is possible that NFC would help to arrange the debt portion for the additional funds, alternatively, MRN could choose to wrap some of the existing NFC debt into a buy-in agreement with PNG. PNG has the option to acquire 30% of the project by paying for their share of spent capital as well as their share of future funding. We do not believe that PNG has the funds to come in for the full 30%; however MRN may wish to entice the government to come aboard as a partner.
- **Other** possible solutions could include: an offtake agreement and a precious metals streaming deal (Yandera has gross discounted value of ~\$500M in gold).

## FCF - Estimated for 2018

We estimate that MRN will generate solid free cash flows in 2018, Yandera's first year of commercial production and thereafter throughout the mine's +20yr life. Although we estimate that MRN will have at ~\$1.5B in debt on its balance sheet by the time commercial production is underway, the resulting ~\$105MM/yr interest payment is overcome by Yandera's cash flow (estimated annual LOM average of \$255MM). We provide our FCF profile estimate below which includes average annual sustaining capital of ~\$15MM:

### MRN FCF Estimate



Source: DCM



## RISKS

Beyond the general risks experienced in the mining business the main risks for MRN include:

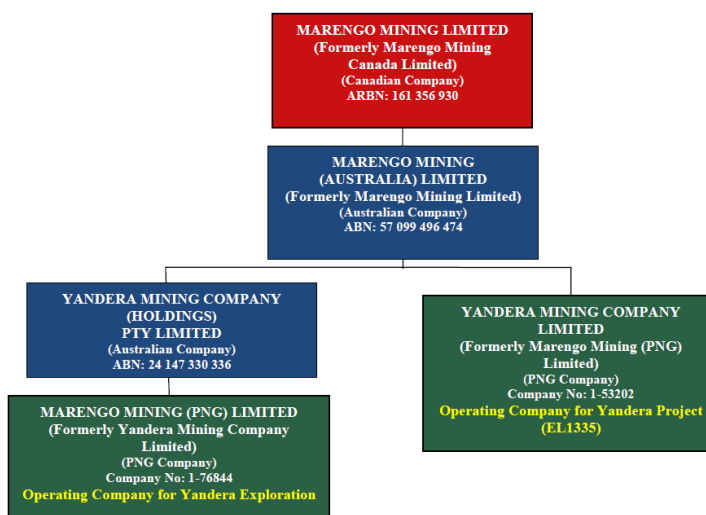
- **One Asset Company (High):** MRN has only its Yandera asset, and as such, has not diversified its project-related risks.
- **Copper Price (Low):** With copper as Yandera's primary metal (~80% of revenue is projected to come from copper), MRN has significant leverage to a single commodity.
- **Country Risk (High):** PNG has been known in the past for resource nationalism. Although we believe that MRN should be safe from significant State intervention, it remains a possibility.
- **Capex (Medium):** MRN has locked-in the bulk (70%) of the pricing for their initial capital requirements at Yandera with fixed EPC pricing from NFC. Although there is a possibility that the remaining 30% could see a degree of inflation. For this reason we estimate additional capital requirement of \$600MM.
- **Permitting Medium (Medium):** An EIS will be submitted after MRN published the feasibility study for Yandera. We believe that the company should be able to acquire all permits necessary in order to commence mining on schedule.
- **Power (High):** MRN must secure a viable power solution for Yandera before meaningful feasibility work. The company has recently signed an MOU with the Madang Provincial Development Corporation (MDC) in PNG that allows MRN to cooperate with the province while exploring opportunities towards becoming an offtake partner on any power supply solution in the province. MDC is currently in discussions with international foreign investment groups, interested in investing in power generation in the province, however at this time we have little visibility as to how these discussions will play out. We note that Yandera's ongoing feasibility study depends in large part on the outcome of power negotiations in PNG. If a power solution is not found in time, the feasibility results (and therefore overall project timeline) could be delayed.
- **Financing (High):** Although MRN has locked in the majority of capex requirement for Yandera with fixed EPC pricing, we consider financing to be a risk as the company will still need to raise ~\$600MM.
- **Tailings Disposal (High):** Marengo is currently working on tailings disposal alternatives for Yandera. Current options include thickened tailings and a deep sea tailings disposal ("DSTD") alternative. Although not yet finalized, we believe that the preferred option for Yandera's tailing management option to be piped to the coast in an ore slurry pipeline and deposited as deep sea tailings similarly to the Ramu Nickel project operated by MCC. Another option would be to pump thickened tailings into the Tai-yor River valley, using a dam-type impoundment. We note that each of the tailings solutions proposed would require its own permitting route and governmental approvals.
- **Weather/Earthquakes (Medium):** Since PNG is a volcanic island with active tectonics earthquakes are common in the country. There has not yet been a detailed study of earthquake risks at Yandera and these will have to be taken into account when considering tailings solutions as well as other geotechnical projects. Further, the area experiences high rainfall at 3.5 to 5 meters per annum, with higher intensity during the November to April monsoon season. This is somewhat less, yet comparable, to weather conditions at Ok Tedi.

### COMPANY DESCRIPTION OVERVIEW

Marengo Mines Ltd., (MRN-T, MMC-A), is a recently re-domiciled Toronto-based mining company focused on developing its large Yandera copper-molybdenum-gold project in Papua New Guinea ("PNG"). Marengo has partnered with Chinese State Owned Enterprise, China Nonferrous Metal Industry's Foreign Engineering and Construction Pty Ltd. as well as Petromin PNG Holding Ltd, PNG's vehicle which holds mineral and petroleum assets.

Marengo Mining Ltd. Canada holds Marengo Mining Ltd. Australia, which in turn controls Yandera Mining Company PTY Ltd., a holding company that holds Marengo Mining (PNG) Ltd.. Marengo Mining (PNG) Ltd. is Marengo's exploration arm and the company that operates exploration activities in PNG. Marengo Mining Ltd. Australia also controls Yandera Mining Company Ltd., a PNG company which oversees operations of the Yandera project. The figure below shows a schematic of MRN's capital structure.

#### MRN Corporate Structure



Source: Marengo Mines Ltd.

In Q4/2012 Marengo re-domiciled to Canada from Australia citing greater availability of capital, improved market profile, and potential to further international investor interest as prospective advantages. Given that the company intends to raise funds, Marengo felt that the North American markets would provide a deeper capital pool and broader investor base from which to draw.

## A Brief History of MRN

In 2005, following an exhaustive 18-month worldwide project search, MRN decided to shift their efforts to porphyry copper exploration in PNG from gold projects in the Ashburton region of Western Australia. At the time Marengo cited the scarcity of quality opportunities in Australia versus the company-making potential of prospects such as Yandera in PNG.

Yandera was first discovered by Australian Government geologists in 1957, since then the property has been explored by several companies including: Kennecott (now owned by Rio Tinto) from 1966 to 1972 and BHP from 1973-1980 when drilling on the property ceased until Marengo resumed exploration activities in 2007. The company has since flown two airborne geophysical surveys, in 2009 and 2012, and has increased total drilling to over 174,000m from 550 diamond drill holes. MRN's efforts are expected to culminate in a feasibility study on Yandera once power and tailings disposal arrangements are settled.

We provide a bulleted historical timeline for MRN below:

- 1957 - Outcropping copper mineralization close to the Yandera village was first investigated by the Australian Bureau of Mineral Resources geologists.
- 1965-1972 - Kennecott Exploration undertook the first systematic exploration of the project area. They completed stream sediment, soil and rock geochemistry programs, and undertook detailed geological mapping, and completed several magnetic and induced polarization surveys as well as the drilling of 12 diamond holes.
- 1973-1975 - BHP completed an additional 31,000 metres of diamond drilling. They also completed further geochemical mapping and contour trenching programs. This work led to the identification of the main prospect areas of Gremi, Omora and Imbruminda. BHP later relinquished the project in favour of Ok Tedi.
- 2005 - Marengo acquired an interest in the Yandera Project in 2005 by entering into a 50:50 Joint Venture with Belvedere Resources (a private company). Marengo later acquired 100% of Yandera through purchasing Belvedere's interest.
- 2007 - An indicated resource of 163 Mt at 0.49% Cu equivalent and inferred resource of 497 Mt at 0.48% Cu equivalent was estimated by Golder Associates (Golder) in accordance with JORC.
- 2012 - Yandera's resource was upgraded to include 5.2B lbs Cu, 150M lbs Mo and 1.1M ozs Au
- 2013 - Domiciled to Canada from Australia

## **Management and Directors**

We believe that Marengo has access to quality technical support from its largest investor Sentient Group. The quality and experience of personnel at the company's disposal leads us to believe that NFC was happy to leave operations of the project in the hands of MRN while simply receiving the mine's offtake.

### **Management:**

#### **Leslie (Les) Emery, President/CEO**

Mr. Les Emery is a founding director of Marengo and has been involved in the Western Australian mining industry for more than 40 years and has experience in exploration, mining and corporate administration. Until June 2001 he was Managing Director of Lynas Corporation Limited (formerly Lynas Gold NL) for 15 years and was instrumental in the transition of that Company from explorer to gold producer. In addition Mr Emery negotiated the entry of Lynas Corporation into that company's now core business, the Mt Weld rare earths and tantalum/niobium project.

#### **Paul Korpi B. Sc. Met. Eng. Chief Operating Officer**

Mr. Korpi has more than 35 years experience in the mining industry spanning a long and distinguished career during which he has worked in all phases of surface and underground mine operations, including mine and project development, general and executive management and operations in the United States, Canada, Indonesia and Central Asia.

#### **Craig McGown , Vice President - Corporate Development**

Mr. McGown has more than 35 years experience in corporate finance, covering mergers and acquisitions, capital raisings in both domestic and international financial markets, asset acquisitions and asset disposals, initial public offerings and corporate restructurings.

### **Non-Executive Directors:**

#### **John Hick BA, LLB, Non-Executive Director**

Mr. Hick has over 30 years of experience in the mining industry in both senior management positions and as an independent director, during which he has spent the majority of his time based in Toronto, Canada.

#### **Sir Rabbie Namaliu, Non-Executive Director**

Former Prime Minister Sir Rabbie Namaliu has ministerial experience in Foreign Affairs and Trade, Treasury, Primary Industry, Petroleum and Energy and other areas of government responsibility including being the Speaker of the Papua New Guinea National Parliament.

## Sentient Group Connection

Marengo's main shareholder is the Sentient Group which currently holds ~22% of the company. The Sentient Group is an independent investment firm that specializes in the global resource industry. Sentient typically participates directly in mineral and energy projects and seeks projects with high return potential and capable management teams. MRN's connection with Sentient is an asset as it will provide technical and financial/administrative support for the company.

In February 2013 Sentient provided MRN with an un-secured working capital facility of \$10MM repayable before December 2013, meant to bridge the time gap before the company receives funds from NFC and/or additional financing. On August 12, 2013, MRN drew down the final \$6MM tranche of a \$15MM convertible debenture with Sentient. MRN currently holds ~\$9MM in cash and we believe that Sentient, as a long term investor, will continue to support MRN (barring unforeseen events) through Yandera's development.

In addition, the Group issued an additional US\$1 million principal amount of Debentures in satisfaction of the interest accrued and payable up to the end of August 2013, under the existing unsecured facility of US\$10 million provided by Sentient in February 2013.

Sentient currently has two Directors on the Board of Directors of Marengo Mining.

## Holders and Share Distribution - Savvy Ownership Base

MRN is closely held with the top ten shareholders owning over 67% of the company and the top five holders owning over 55%. We see MRN's core shareholder base as having knowledge of the mining sector and a long-term investment horizon.

Below we provide a table outlining the major holders of MRN.

### MRN's 20 Top Holders

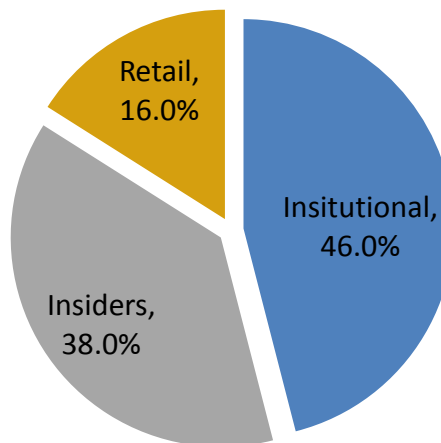
		Listed common shares	
		Number of shares	Percentage of shares
1	The Sentient Group	249,953,080	21.97%
2	National Nominees Limited	157,636,480	13.85%
3	Citicorp Nominees Pty Limited	48,301,715	4.24%
4	Paradigm Capital Partners Ltd	41,163,288	3.62%
5	Woonalee Pty Ltd <Pessios Family S/F A/C>	11,000,000	0.97%
6	J P Morgan Nominees Australia Limited	10,099,768	0.89%
7	Mr Simon Korua	10,000,000	0.88%
8	Bell Potter Nominees Ltd <Bb Nominees A/C>	9,777,778	0.86%
9	Capital Nominees Limited	9,769,548	0.86%
10	Leet Investments Pty Ltd	9,500,000	0.83%
11	HSBC Custody Nominees <Australia>	9,296,011	0.82%
12	Leet Investments Pty Ltd <Superannuation Fund A/C>	8,500,000	0.75%
13	Pacific Nominees Limited	7,500,000	0.66%
14	Papua New Guinea Register Control	6,860,128	0.60%
15	Bond Street Custodians Limited <Davkre - V05765 A/C>	6,750,000	0.59%
16	Sempra Metals & Concentrates LLC	6,500,000	0.57%
17	Mr Les Emery	5,935,000	0.52%
18	The Stephens Group Pty Ltd	4,500,000	0.40%
19	Mr Royce William Moore	3,700,000	0.33%
20	Jongila Nominees Pty Ltd <Pension Fund No2 A/C>	3,450,000	0.30%
		620,192,796	54.50%

Source: Factset, Dundee Securities, Marengo Mines Ltd.

MRN's ownership is distributed between institutional owners, insiders (including Sentient) and retail investors holding approximately 46%, 38% and 16% of MRN respectively.

#### **MRN's Ownership Structure**

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Source: Factset, Dundee Securities

#### **Yandera: One of the rare projects that can potentially "self-finance"**

In 2011 MRN signed a Memorandum of Understanding ("MoU") with China Nonferrous Metal Industry's Foreign Engineering and Construction Co Ltd ("NFC"), for the financing, construction and development of Yandera. In addition, NFC has agreed to fund 70% of the capital required for Yandera (pending the results of the feasibility study) through debt. We consider MRN's access to capital a competitive advantage as it is something that many comparable developers don't have.

As part of their MoU with Marengo, NFC has undertaken the key engineering studies and design for Yandera's processing facilities. Additionally, detailed engineering for mine infrastructure and port facilities were submitted to NFC and, in February 2013, Marengo received fixed Engineering Procurement and Construction ("EPC") pricing from their Chinese partners. In an environment of capex inflation, the fixed EPC pricing establishes a limit to the amount of capital MRN will require for the Yandera project. EPC pricing for processing facilities, mine infrastructure and port facilities has been set by NFC at US\$1.42 billion. Pricing for other infrastructure, including fleet, pre-strip, and power line is subject to the completion of the pending feasibility study; these items are estimated to cost between \$300-400 million for a total capex of \$1.7-1.85 billion. We note that the pricing is based on the assumption of an increase to the initial processing rate to 30Mtpa and that the \$1.7-1.85 billion capex number remains below MRN's initial guidance for ~\$2 billion.

## STRONG CHINESE AND LOCAL PARTNERS

Marengo has two potential partners for Yandera: NFC, which has already set fixed EPC pricing and given financing terms for the project and Petromin MNG Holdings Ltd., whose participation in the project is less certain. Petromin is a resource investment company that is wholly-owned by the PNG Government with the mandate to preserve the Government's interest in mining and oil & gas projects in PNG. It has an Investment and Cooperation Agreement in place with MRN that establishes the framework to acquire a 30% contributory interest in the Yandera project. In order to earn its interest; Petromin must fund its pro-rata share of the project after reimbursing Marengo's mining costs incurred to date. We believe that Petromin will not elect to pursue the 30% interest in Yandera due to lack of available capital.

## OPERATIONS- YANDERA PROJECT

### General Description

MRN's 100%-owned Yandera Cu-Mo-Au property is located roughly 70km inland from the Papua New Guinea coast and about 95km southwest of the port city Madang, the capital of Madang Province. When in operation, Yandera will be accessed by a 40km long road spur from the Lae Highway connecting to the port city of Madang. The site is currently only accessible via an unmaintained four wheel drive track and almost all exploration activities are supported by helicopter.

### *Marengo's Project*



Source: Marengo Mines Ltd.

With its potential to largely "self-finance" we believe that Yandera will enter production after its 2-year development, in 2018 if permitting and power can be arranged in a timely manner. At full production, we estimate that Yandera will produce over 210MM lbs of copper in concentrate per year over the LOM. Concentrate is to be transported from the mine site along a pipeline to port at Madang, where it will be shipped to international buyers. We provide a table outlining the general description of Yandera below.

**Yandera Project Basic Description**

Project Description	Yandera	Cobre Panama	Constancia
<b>Ownership</b>	MRN 100%	FM 80%	HBM 100%
<b>Status</b>	Feasibility	Construction	Construction
<b>Mine Location</b>	Papua New Guinea	Panama	Peru
<b>Mine Type</b>	Open Pit	Open Pit	Open Pit
<b>Start Date (Est.)</b>	2018	2016	2015
<b>Extraction Rate</b>	80,000 tpd	87,000 tpd	79,000
<b>Remaining Mine Life</b>	20 years	31 years	16 years
<b>Copper Grade</b>	0.40%	0.41%	0.36%
<b>Gold Grade</b>	0.09 g/t	0.08 g/t	0.07 g/t
<b>Molybdenum Grade</b>	0.01%	--	--
<b>Annual Cu Production</b>	211MM lbs	600MM lbs	225MM lbs
<b>Annual Au Production</b>	58,000 ozs	99,000 ozs	36,000 ozs
<b>Annual Mo Production</b>	190,000 lbs	--	--
<b>Cu Recovery</b>	>85%	89%	90%
<b>Au Recovery</b>	70%	55%	80%
<b>Mo Recovery</b>	75%	--	--
<b>Operating Cost</b>	\$9.30/tonne milled	\$6.89/tonne milled	\$9.42/tonne milled
<b>Initial Capex</b>	\$2 Billion	\$6.45 Billion	\$1.55 Billion
<b>Sustaining Capex</b>	\$15MM /yr	\$77MM /yr	\$42MM /yr
<b>LOM Cash Cost</b>	\$1.30/lb Cu	\$1.01/lb Cu	\$1.00/lb Cu

Source: Marengo Mines Ltd., Dundee Securities

When compared to First Quantum's Cobre Panama project and HudBay's Constancia project, MRN's Yandera project stacks up well. It is smaller in size than Cobre Panama, but so is the estimated capital cost to build. In terms of scale Yandera is more similar to Constancia, but with a larger gold component and slightly longer mine life.



## Operating Environment - PNG

Papua New Guinea is considered to be a relatively accommodating country from a mining perspective, however political instability and loose regulatory guidelines are considered hindrances to mine development. MRN currently has good relations with the leaders of PNG, and we believe that the company can navigate the regulatory process although their projected timeline may be a bit aggressive. (See our catalyst section).

We note that a delegation from PNG, led by Mining Minister Byron Chan, promoted the country as a mining destination at PDAC-2013 where Mr. Chan congratulated Marengo on receiving its fixed EPC pricing for Yandera. MRN notes that Mr. Chan "...also stated that the development of the Yandera Project is another example of the co-operation between the Government, both the national and provincial, the relevant departments, interested stakeholders, local communities and mining companies". With the apparent support of the country's Mining Minister, we believe that MRN should be able to navigate PNG's political landscape.

## Project Setting and Geology

Marengo's interests in PNG currently span over 1,700 square kilometers over 11 exploration licenses. The Yandera resource is located on license EL1335 with an area of 246.5 square kilometers. The project is hosted primarily in limestone and lies in the New Guinea Copper fold belt comprised predominantly of deformed Mesozoic and Tertiary rocks. The Yandera deposit is a large Cu-Mo-Au porphyry. Mineralization identified at Yandera includes zones of oxide, transition (oxide plus sulphide material), supergene (re-deposition of leached copper to the oxide/sulphide interface), enriched (deposition of covellite or chalcocite from acidic magmatic fluids) and hypogene material. Most mineralization is hypogene with principal sulphides being pyrite, molybdenite, chalcopyrite, and bornite.

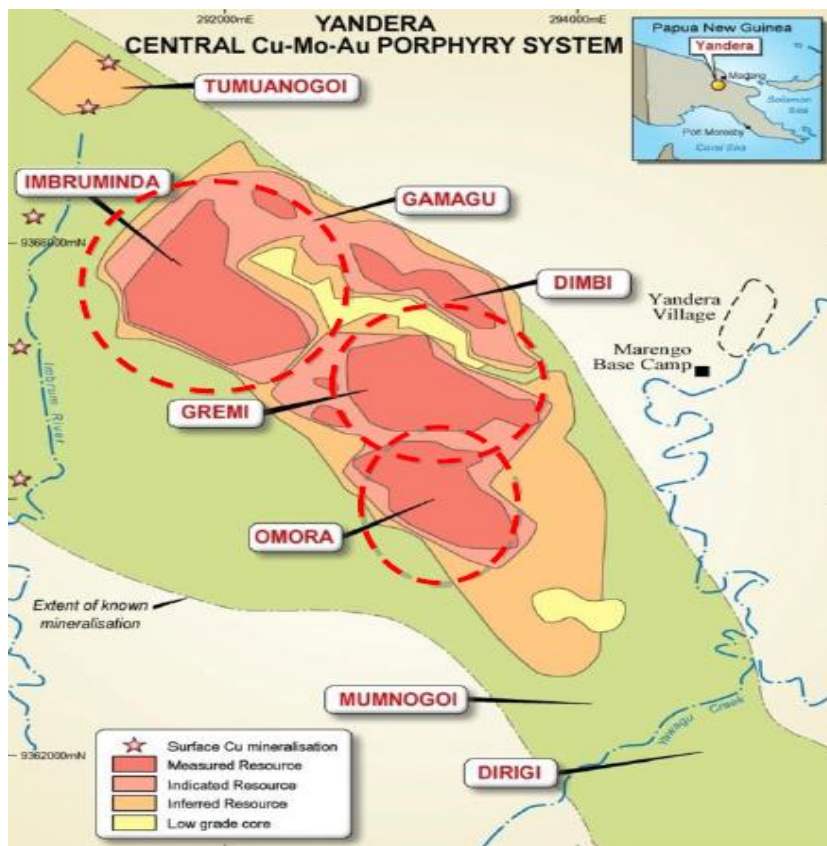
### *Yandara Site - Aerial View*



Source: DCM

Yandera comprises six main prospect areas, these are: Mumnogo, Omora, Gremi, Imbruminda, Gamagu, and Dimbi, with the bulk of the mineralization contained in Gremi, Omora and Imbruminda.

**Yandera Geological Setting**



Source: Marengo Mines Ltd.

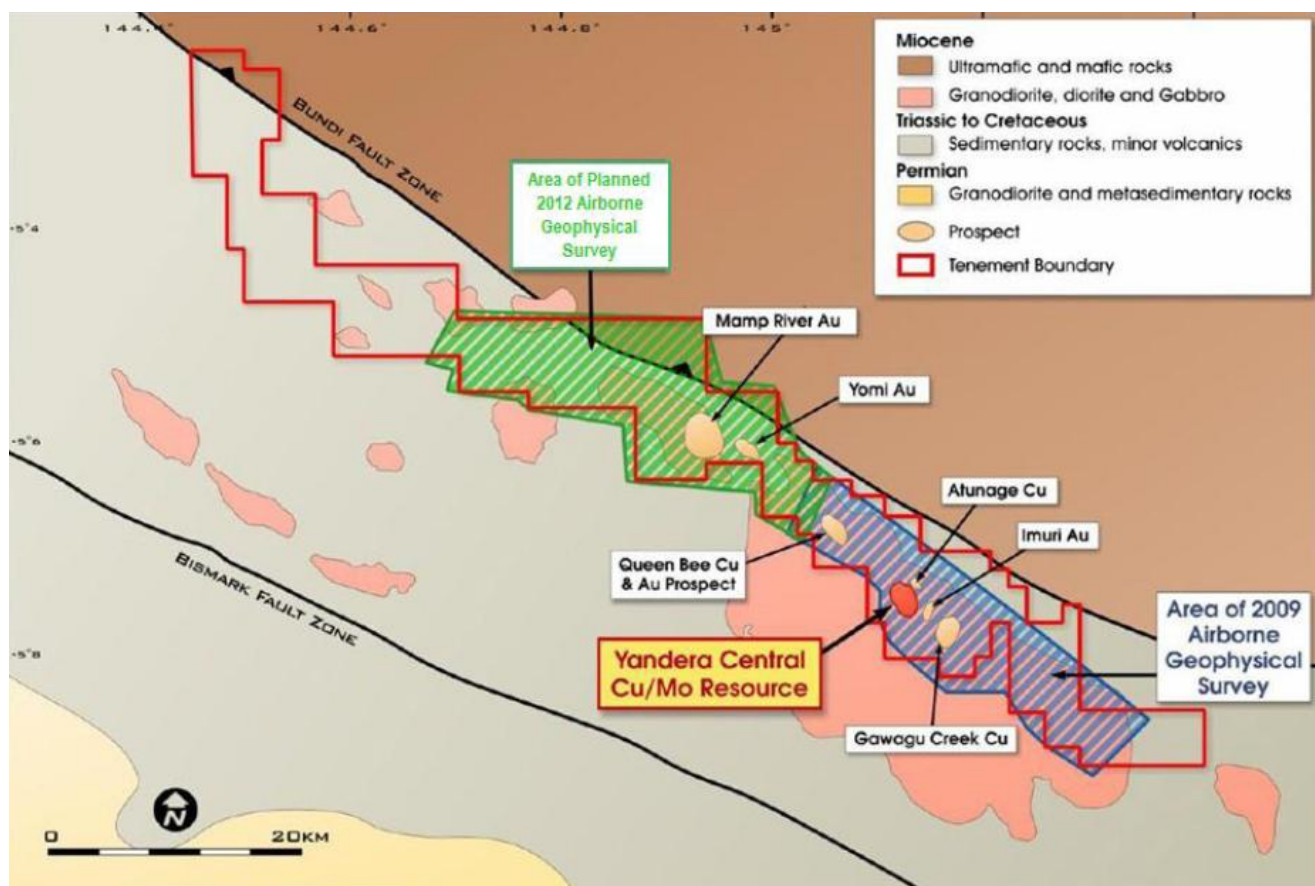
Optimization work performed in early 2013 on bulk samples from the Gremi and Imbruminda zones has shown very good metal recoveries. Copper recovery from the tests was 95.8% for Gremi and 94% for Imbruminda. Concentrate grades produced from the bulk sample tests was 40-41% for both zones.

## Exploration

With less than 5% of the property's targeted mineral structure drilled to date, Marengo is not yet done delineating the total size of its resource at Yandera. Recently a 29-hole drill program was completed at Yandera Central (comprised of the Imbruminda, Gamagu, Gremi, Omora, Mumnogoi and Dimbi areas) and there remain a number of exploration targets left to explore. The Company announced in September a ten hole diamond drill program has commenced targeting the Dimbi zone

to identify near surface resources that may enhance a starter pit for a Yandera mining operation. Other exploration targets include the Mamp River (Au), Yomi (Au), Queen Bee (Cu-Au), Atunage (Cu), Imuri (Au) and Gawagu Creek (Cu) prospects outlined in a 2009 airborne geophysical survey. The list of MRN's prospects is likely to grow after the results of the company's 2012 survey to the northwest are released.

### Extensive Exploration Potential at Yandera



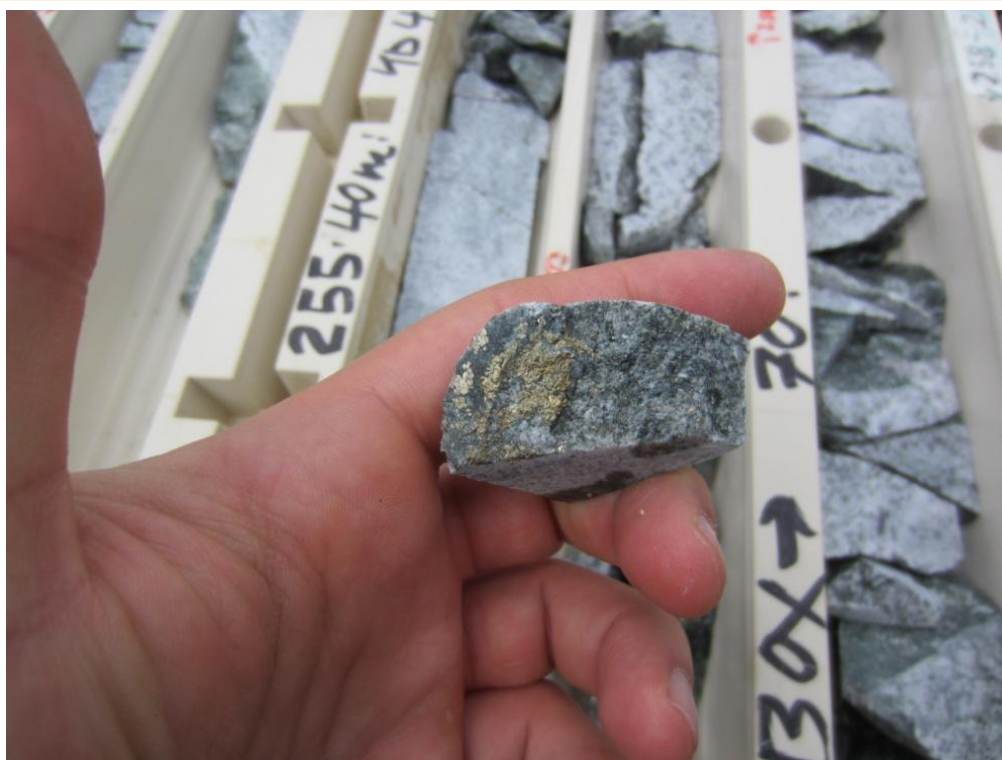
Source: Marengo Mines Ltd.

### Resources and Reserves

Yandera currently boasts a preliminary resource estimate of 750MM tonnes grading ~0.40% Cu and 120ppm Mo for approximately 5B lbs of copper and 140MM lbs of molybdenum. The resource also includes about 1.5MM ozs of gold.

#### *Yandera Resource and Reserve Estimate and Drill Core*

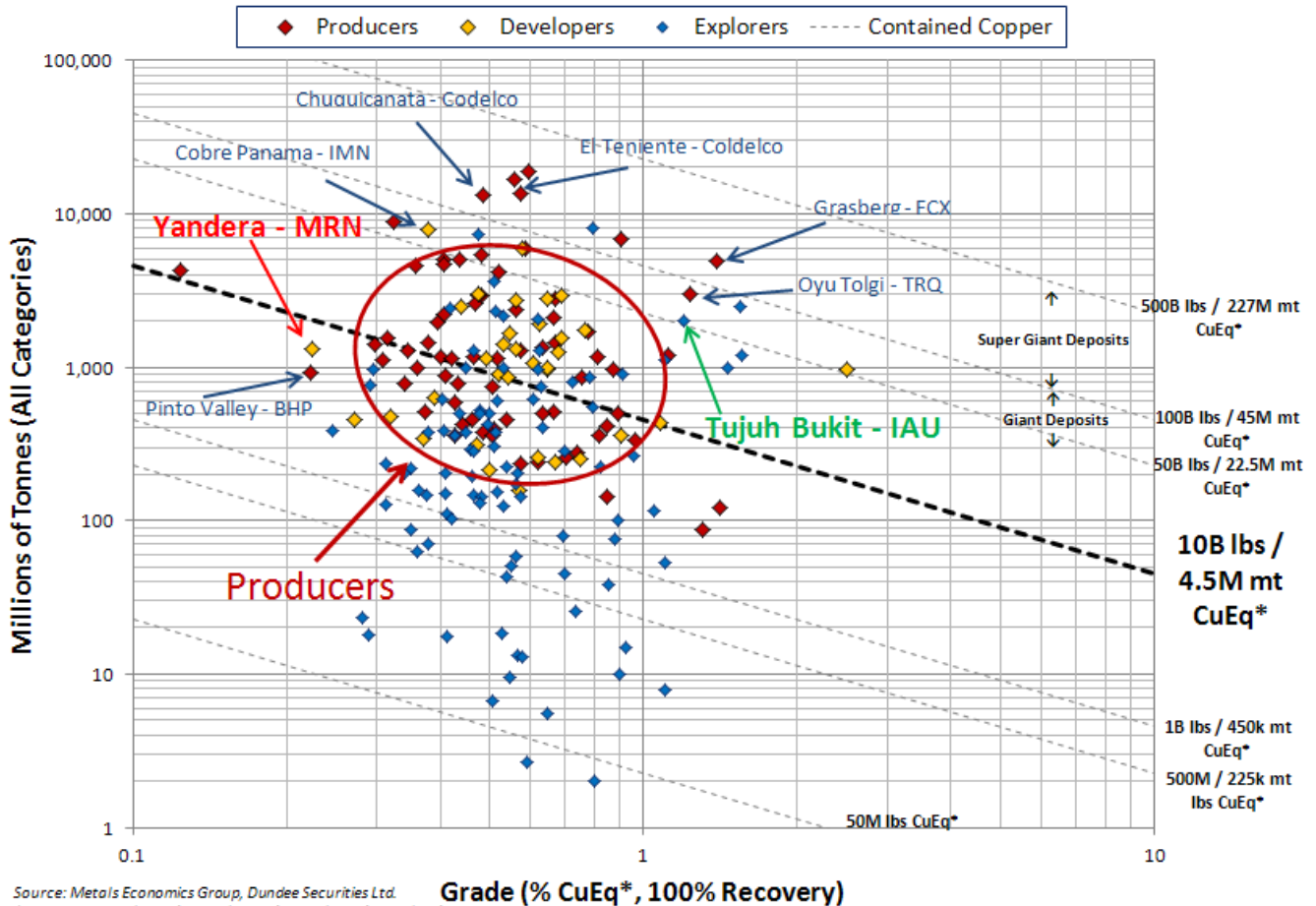
Table 1 – Copper Resource (0.25% Cu cut-off)			
Category	Tonnes (M)	Copper Grade (%)	Contained Copper (M lbs)
Measured	248	0.43	2,350
Indicated	114	0.42	1,056
Inferred	218	0.37	1,778



Source: Marengo Mines Ltd., DCM

When compared to other large copper projects both in production and development stages, we see that Yandera is well positioned with almost 10B lbs of copper equivalent resource and exploration potential. With Yandera, MRN currently sits just outside the "sweet spot" of world-class producing copper assets due to slightly lower grades. However, we note that Yandera is of better quality than the observed pipeline projects. Further, Yandera would fall directly in the "sweet spot" if the cutoff grade for the project's resources was increased. This would raise the overall resource grade while lowering tonnage.

**Worldwide Copper Porphyries (total mineral inventory)**



Source: Metals Economics Group, Dundee Securities Ltd.  
 \*CuEq based on \$1425/oz Au, \$27.50/oz Ag, \$2.75/lb Cu, \$14/lb Mo

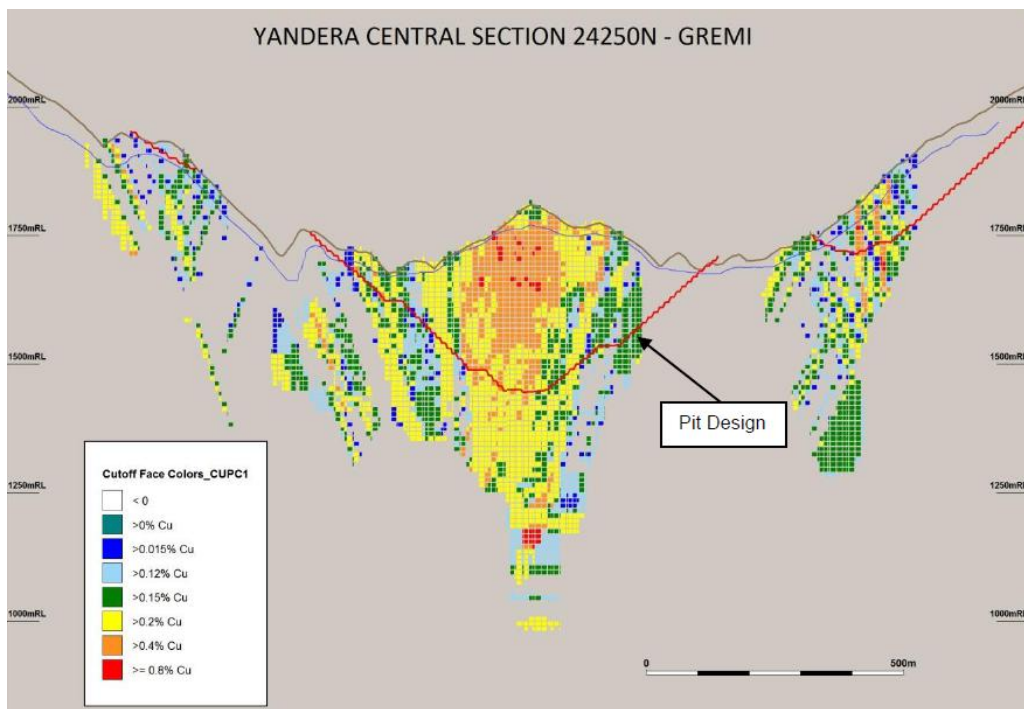
Source: Dundee Securities, Company Documents

When compared to Intrepid's Tujuh Bukit project which hosts a deposit with similar-style to Yandera in a comparable region, MRN's project has a lower-tonnage resource at a lower CuEq grade. This is mainly a function of two things, 1) Yandera is at an earlier stage of exploration and 2) Tujuh Bukit has a significant gold-rich oxide cap which increases the effective grade of the deposit. We note that Intrepid appears to have lost control of the project to their Indonesian partner.

### Mine Plan

We estimate Yandera is scheduled to begin pre-production in 2017 with commercial production in 2018 at a preliminary mill throughput of 68,500tpd, ramping up to 80,000tpd by 2019. We estimate that the operation, once in full production, will average approximately 205MM lbs of copper in concentrate per year over a 20-year mine life. Yandera is projected to be a large, high capacity, open pit mine with the potential to extract 73MM tonnes of material from the pit per year at an average LOM strip ratio of 1.5:1. Mining is to be carried out with traditional open pit mining methods using truck and shovel and blasting.

### Proposed Final Pit Outline

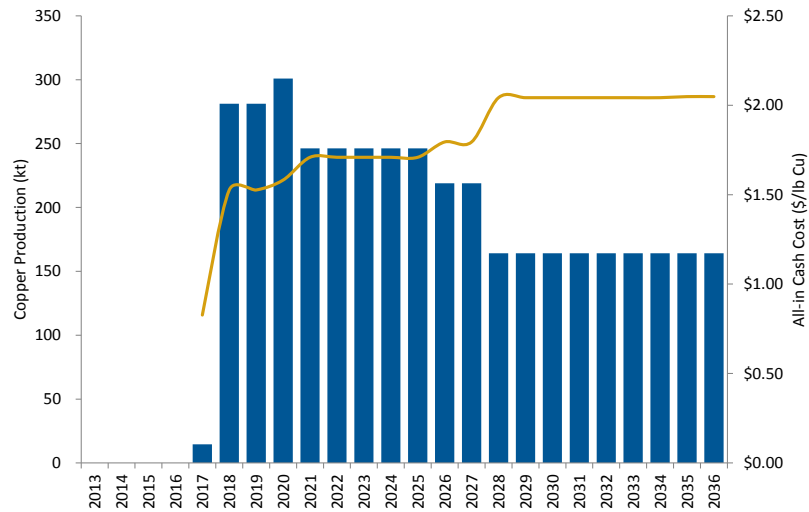


Source: Marengo Mines Ltd.

### Production

We estimate that Marengo will start pre-production mining operations at Yandera in 2017, with full production realized in 2019. Copper production is expected to ramp-up quickly and, with grades in the 0.6% range during the early years of operation, copper in concentrate should average ~250MM lbs until 2027. During the early years of high production, we estimate that cash costs at Yandera will range from \$0.99-1.74/lb Cu and will average \$1.97/lb Cu thereafter.

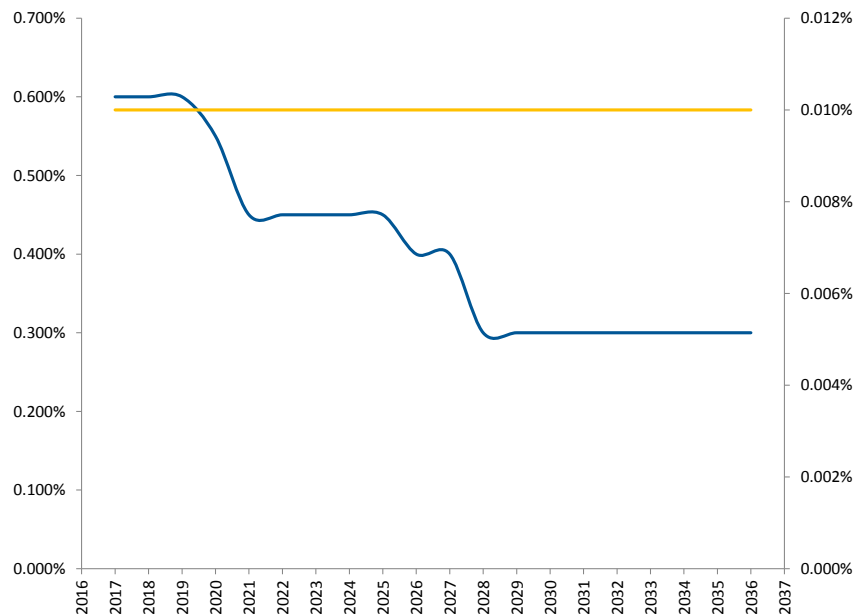
#### Yandera Production Estimate



Source: DCM

Based on MRN's latest technical report issued on Yandera, we estimate that LOM copper grades should average 0.42%, with molybdenum and gold averaging grades of 0.01% and 0.09 g/t respectively.

#### Yandera Grade Schedule Estimate



Source: Marengo Mines Ltd., Dundee Securities

## Processing

The proposed flowsheet for the processing of Yandera ore consists of: primary gyratory crushing, two parallel SAG mills, rougher/scavenger floatation with bulk concentrate regrind and copper cleaner, magnetic separation for magnetite separation, 6-inch diameter slurry pipeline transport to port of Madang (100km away), and tailings thickening and disposal. Only 25km from Yandera is a concentrate pipeline operated by Ramu Nickel that runs to Madang. Depending on which processing option MRN chooses, the company will tie into this pipeline route to either transport ore or concentrate, and perhaps tailings, to Madang.

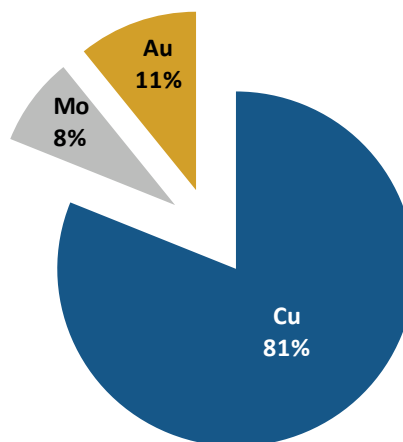
We estimate plant recoveries for copper molybdenum and gold to be 85%, 75% and 70% respectively. We note that our estimates are conservative and are at the low-end of company guidance (up to 90% for copper). We await the feasibility study in order to update our recovery estimates but do consider that improved recoveries could represent significant upside for the project.

## Revenue, Products and Marketing

Revenue: Based on our metal price assumptions and our production forecast, we estimate that approximately 81% of LOM revenue at Yandera will come from copper, whereas gold and molybdenum will make up 11% and 8% respectively.

### ***MRN's Projected LOM Revenue Split for Yandera***

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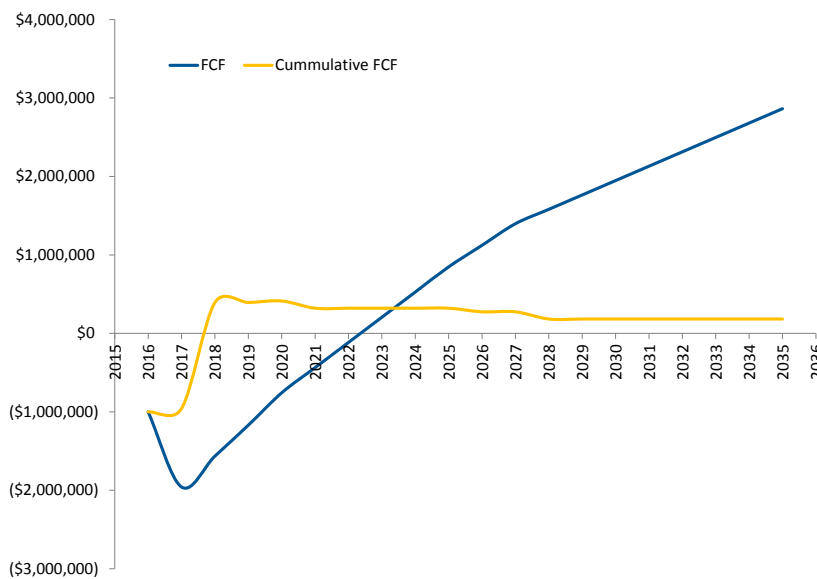
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Source: Marengo Mines Ltd., Dundee Securities

Based on our estimates of free cash flow generated by Yandera, we predict that the project should generate total cash flow of roughly \$3.0 billion on an undiscounted basis and ~\$282MM on a discounted basis (NPV, 10%). Our estimates indicate a payback period and discounted payback period of ~5 years and 8 years respectively for Yandera, with a 13% IRR.



### Yandera FCF Profile



Source: DCM

**Products:** Marengo currently intends to produce both high grade copper and molybdenum concentrates at Yandera. The project is expected to produce ~245,000 tonnes of copper concentrate per year at a grade between 30% and 40% copper (for ~220MM lbs Cu/yr). Preliminary metallurgy suggests that the copper concentrate should not contain any penalty elements and MRN estimates that they will receive payment for 96% of the copper contained from the smelter. MRN also expects to receive additional payment for gold and silver contained in the copper concentrate. We currently give no value to Yandera's potential silver production, but do account for gold revenue.

Yandera's is also projected to produce roughly 4,300 tonnes of molybdenum concentrate annually, at a grade of ~50% Mo (for ~4.5MM lbs Mo/yr). Typically, high grade molybdenum concentrates, like the one Yandera is slated to produce, are sold to roasters to generate roasted concentrates. We believe that Yandera's molybdenum concentrate will be sold to a roaster instead of being toll-treated.

The Yandera project also contains a magnetite component from which MRN believes an iron ore concentrate could be manufactured. Initial indications are for ~200,000 tpa of a ~67% Fe concentrate. We currently attribute no value to Yandera's iron potential.

**Marketing:** MRN plans to sell Yandera's metal concentrates to international buyers with products leaving PNG through shipments from the port of Madang. Copper concentrate is to be slurried to port using a 100km 6-inch diameter pipeline that will follow an existing route currently being used for a Ramu Nickel pipeline. Molybdenum concentrate will be transported by truck to port.

### **Infrastructure - Site Visit Boosted our Confidence**

When we visited Yandera in PNG we were pleasantly surprised with the level and quality of infrastructure available to MRN. The company has secured a largely-functional deepwater port and loading facility, there is a road that leads from the port to the mine site and there is an existing pipeline route that MRN can tie into less than 25km away from the Yandera site. The only major construction projects that the company must undertake is the concentrator plant for which it already has engineering, design work and fixed EPC pricing, and pipeline construction.

### **Minesite - Work to be done**

There is currently limited infrastructure at the Yandera site as the company is still largely in the exploration/feasibility stage. When project construction commences, MRN will need to build a mill, tailings impoundment (if dam option is selected), a camp, garage, electrical facilities, water treatment plant and access road. We note that NFC has promised to provide detailed engineering work and construction services through its engineering consultancy arm for Yandera's development.

### **Pipeline and Road - Route established by Ramu Nickel**

Regardless on which tailings disposal option the company (see below) chooses, Marengo will have to construct a pipeline from the Yandera mine site to the port at Madang. What remains to be seen is what size the pipeline will be. If Marengo chooses to dispose of tailings on site, only the copper concentrate will be piped to port (molybdenum will be transported by truck) requiring a 15cm diameter pipeline. If MRN elects to proceed with the deep sea tailings alternative the company will build the mill at the port and slurry down all ore from Yandera. This option would necessitate a 1m diameter pipeline.

Whichever option is chosen, the good news for MRN is that the pipeline route is already built, maintained and currently in use by Ramu Nickel, a private Chinese nickel company with a large laterite nickel project nearby.

### Port - MRN has one but it needs an upgrade

MRN has acquired an old deep sea port in Madang that will serve to load Yandera's concentrate aboard vessels for shipping. However, the port is old and will need an upgrade (see sections on port and costs below).

### Ramu Nickel's Pipeline in PNG

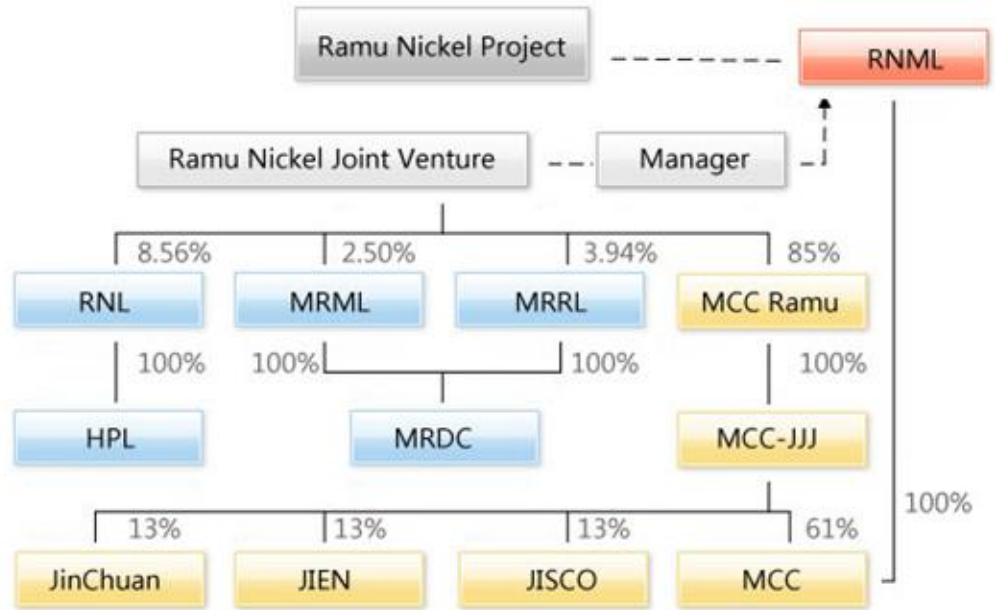


Source: Ramu Nickel, Marengo Mines Ltd., DCM

**Ramu Nickel - Already Operating in the Region**

Ramu Nico Management Ltd ("MMC") operates the large Ramu Nickel project between Yandera and Madang. The project consists of a 31,000tpy nickel laterite mining operation with a 135km slurry pipeline. Ramu Nickel is an unincorporated joint venture between MCC (85%); the Mineral Resource Development Corporation (MRDC) on behalf of PNG government (6.44%); and former developer Highland Pacific Ltd. (8.56%). MCC is comprised of the JinChuan group (13%), Jilin Jien Nickel Industry Co (13%), Jindal Iron and Steel Company Limited (13%) and China Metallurgical Group Corporation (61%) out of China.

**Ramu Nickel Project Ownership Structure in PNG**



Source: RamuNico

### Port - Secured with pre-existing facilities

In August 2012, MRN acquired harbourside land and a ship-loader in the Madang Port. MRN acquired the port facilities for \$10MM, they are intended to be used for concentrate storage/shipping, power station and transformers, office/warehousing facilities and staff accommodation. We believe that MRN did well in acquiring the port but we also note that it will most likely require an upgrade in order to support Yandera's volumes. The amount quoted in the fixed EPC contract described below includes any necessary port upgrades. We provide pictures of MRN's facilities in Madang below.

#### ***Marengo's Port Facility at Madang, PNG***

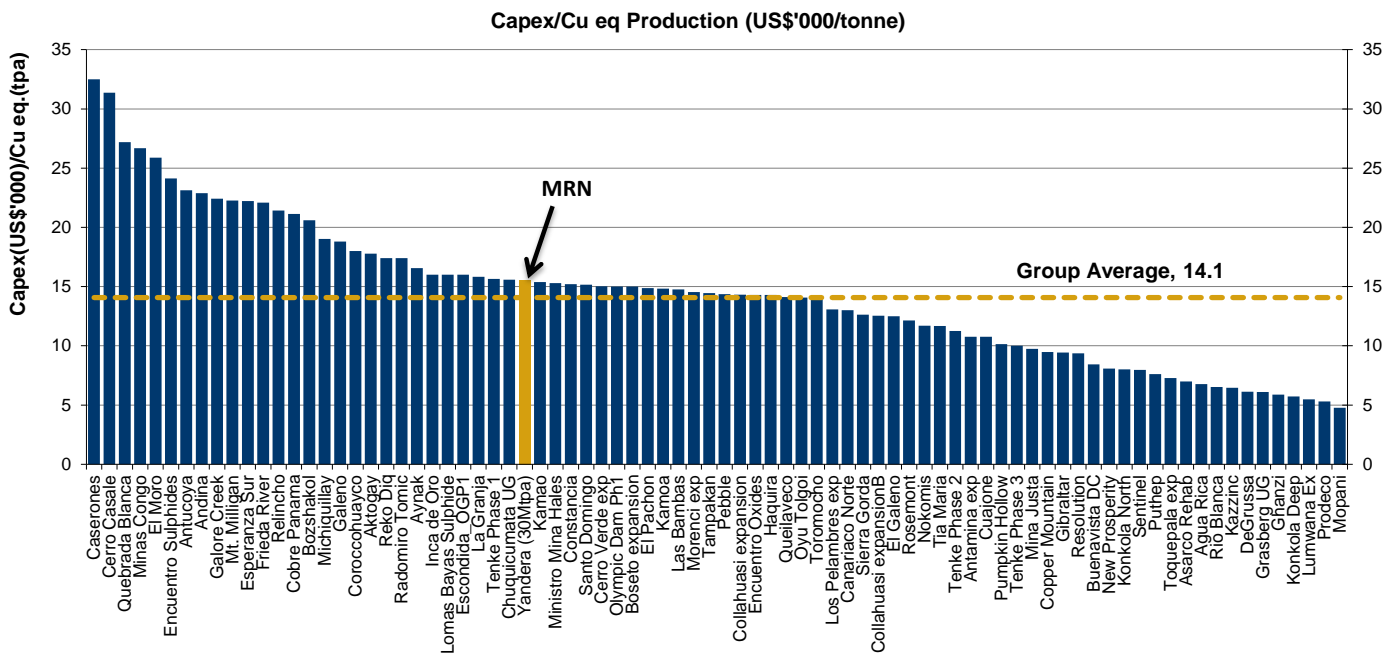


Source: Marengo Mines Ltd., DCM

**Costs**

Capital Costs: As we mention above NFC has already provided key engineering studies and designs for Yandera's processing facilities. Additionally, NFC has also undertaken review of detailed engineering for mine infrastructure and port facilities and, in February 2013, Marengo received fixed Engineering Procurement and Construction ("EPC") pricing from their Chinese partners. Importantly, in an environment of capex inflation, the fixed EPC pricing establishes a limit to the amount of capital MRN will require for the Yandera project. Pricing for mine infrastructure and port facilities has been set by NFC at US\$1.42 billion. The costs for other infrastructure items, including mining fleet, pre-strip, and power line/plant remains subject to the completion of the pending feasibility study; the costs for these items are estimated to total between \$300-400 million for a total capex of \$1.7-1.85 billion. Current pricing estimates are based on the assumption of an increase to the initial processing rate to 30Mtpa and that the \$1.7-1.85 billion capex number remains below MRN's initial guidance for ~\$2 billion. We have conservatively considered an initial capex of \$2 billion in our model. In terms of capex intensity of \$15.1k/t (annual copper equivalent production per dollar of initial capital expenditure), Yandera falls slightly above the average of \$14.1k/t CuEq when using our \$2 billion capex estimate. However, we note that Yandera's capital intensity falls to \$13.2-14.4k/t CuEq when the company's guidance of \$1.7-1.85 billion is used. Moreover, as noted above, Yandera's capital estimate is largely fixed so there is less risk for this number to increase whereas many of the other projects listed in the chart below are likely to see significant upward drift in their capital requirements, once finalized.

**Yandera's Capex Intensity versus Peers (\$'000/t CuEq)**



Sources: Companies corporate presentations/websites/43-101

Source: Company Documents, DCM

**Operating Costs:** Operating cost guidance has not yet been provided for Yandera, however it will be given in the upcoming Feasibility Study. We provide our current assumptions (based on similar projects) below. Our total opex estimate for Yandera sums to \$9.30/tonne milled. Mining costs (given on a per-tonne-mined basis in the table below) include drilling, blasting, truck haulage and fuel while milling costs include crushing, grinding, flotation, and tailings handling.

**Yandera Project Operating Cost and Payability Assumptions**

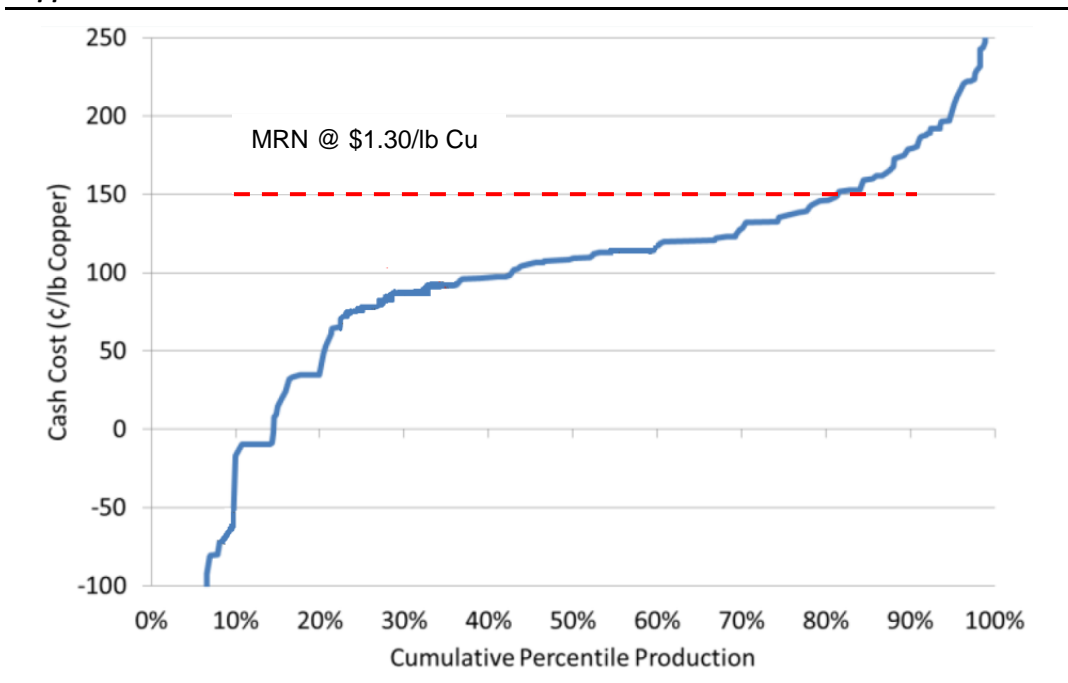
Mining	\$1.50	\$/tonne	<table border="1"> <tr> <td>Cu payable</td> <td>96%</td> </tr> <tr> <td>Mo payable</td> <td>95%</td> </tr> <tr> <td>Au payable</td> <td>90%</td> </tr> </table>	Cu payable	96%	Mo payable	95%	Au payable	90%
Cu payable	96%								
Mo payable	95%								
Au payable	90%								
Milling	\$5.00	\$/tonne							
Leaching	\$0.61	\$/tonne							
G&A	\$0.50	\$/tonne							
<b>Total</b>	<b>\$9.30</b>	<b>\$/tonne</b>							

Source: Marengo Mines Ltd., Dundee Securities

Additionally, we estimate that TCs should average ~\$75/dmt of concentrate, with a ~\$40/t RC and \$30/t freight charge. We believe that our estimates (to be refined after the feasibility study release) are conservative.

When all costs for Yandera and our assumed payability for the metals produced are accounted for, we estimate that average total LOM cash costs for the project amount to ~\$1.30/lb Cu. This would make Marengo a 3rd quartile copper producer.

**Copper Cost Curve**



Source: Inmet Mining, Dundee Securities

### **Power Agreement - Still up in the Air**

One of the main factors that is delaying MRN's feasibility work and the overall progress of Yandera is the lack of a power solution in PNG. There are no existing power lines in the areas surrounding Yandera, and the region consists of narrow valleys and steep hills which would make a potential power route costly.

Yandera's power demand is currently estimated to be about 80MW. The original design planned for a single power source that would be spread between the project sites by a high voltage transmission line. The generators that would be used were estimated to consume about 400 tonnes of fuel per day. Since power generation is more efficient at low elevation, MRN planned to place the power generation plant in Madang.

On October 15th, 2013 the company signed an MOU with the Madang Provincial Development Corporation (MDC) in PNG that allows MRN to cooperate with the province while exploring opportunities towards becoming an offtake partner on any power supply solution in the province. MDC is currently in discussions with international foreign investment groups, interested in investing in power generation in the province, however at this time we have little visibility as to how these discussions will play out. We note that Yandera's ongoing feasibility study depends in large part on the outcome of power negotiations in PNG. If a power solution is not found in time, the feasibility results (and therefore overall project timeline) is likely to be delayed.

### **Tailings Disposal - Deep sea still on the table**

Besides power, the other main requisite that needs to be resolved by MRN during feasibility work is Yandera's tailings disposal solution. Marengo is currently working on different tailings disposal alternatives for Yandera. Current options include thickened tailings and a deep sea tailings disposal ("DSTD") alternative.

A potential advantage for MRN in using DSTD is that it would allow the company to place milling facilities at the port which would reduce operating costs. But at an additional capital cost of \$150-200MM. This is currently not in our capex estimate.

DSTD involves piping tailings to the ocean depths where oxygen in the water is less abundant. Generally, this method requires that there is a steep drop-off of the continental shelf, which PNG's east coast has. Other elements to consider when using DSTD are tailings density, ocean processes (currents, thermoclines, upwelling etc...) and solubility of metals. These factors could contribute to potential ecological damage and, if commercial fish are affected, could also affect economic harm. The DSTD method is more widely used in regions, such as PNG, where seismic activity and heavy rain are more common because disposition on land in these areas is risky due to the potential for catastrophic failure of dam-type impoundments. Environmental groups argue however that, in many cases, DSTD's potential for negative impact on marine life outweighs the terrestrial risks.

DSTD is not uncommon as the method has been used by many of the largest mining companies in the past over diverse geographical locations.



**Proposed DSTD Minesites**

Country	Location	Company
Indonesia	Awak Mas Sulawesi	Mas Mindo Mining
	Toka Tindung Sulawesi	Aurora
	Gag Island	BHP Biliton, PT Gag Nickel
	Central Maluku	Vale
	Halmahara, North Maluku	Weda Bay Minerals, PT Aneka Tambang
	Jember, East Java	PT Jember Metals, PT Banyuwangu
	Banyuwangi, East Java	PT Jember Metals, PT Banyuwangu
	East Java	PT Jember Metals, PT Banyuwangu
Papua New Guinea	Simberi Island	Nord Australlex
	Woodlark	Kula Gold
	Ramu	Highlands Pacific
Philippines	Tampakan, Mindanao	Xstrata Indophil
	Mindoro, Oriental	Crew Development Corp.
	Kingking, Mindanao	NA
	Rapu Rapu	Lafayette
Solomon Islands	Bugotu Mine	Bogotu Nickel
Fiji	Namosi Mine	Nittetsu Mining
New Caledonia	Boa-Kaine	Iscor
	Nakety	Argossy Minerals
	Prony	NA
	Koniambo	Glencore Xstrata

Source: *MiningWatch.ca*

The largest and most high profile project currently operating in PNG is the Ok Tedi copper mine. Ok Tedi is now completely owned by interests in Papua New Guinea, but had previously been held by a consortium including BHP (past operator) and Inmet. The project has come under fire from environmental groups because of a tailings dam failure, due to heavy rain, that resulted in 80MM tonnes of tailings deposited in the Ok Tedi River. This disaster has perhaps made the PNG government more amenable to DSTD. We note however, that average rainfall at Yandera is only 3m compared to 6m at Ok Tedi.

**Royalties**

There are no known royalties or back-in rights to which the Yandera is subject except for a Mining Lease royalty set at ~2% of NSR payable to the State.

**Permitting**

Marengo is currently preparing an Environmental Impact Assessment ("EIS") for the Yandera project. In order to submit the EIS, MRN must first complete their feasibility study for Yandera on which it will be based. MRN will require a mining lease and an environmental permit to begin mining Yandera.

## **Community Relations**

We feel that Marengo has done an excellent job at integrating the local community's interest with the goals the company has in PNG. The company currently employs ~200 local people in PNG and supports community programs, a primary school, and operates a local medical facility. MRN has also piloted a sustainable development program to develop new crops for the villagers within the project footprint area.

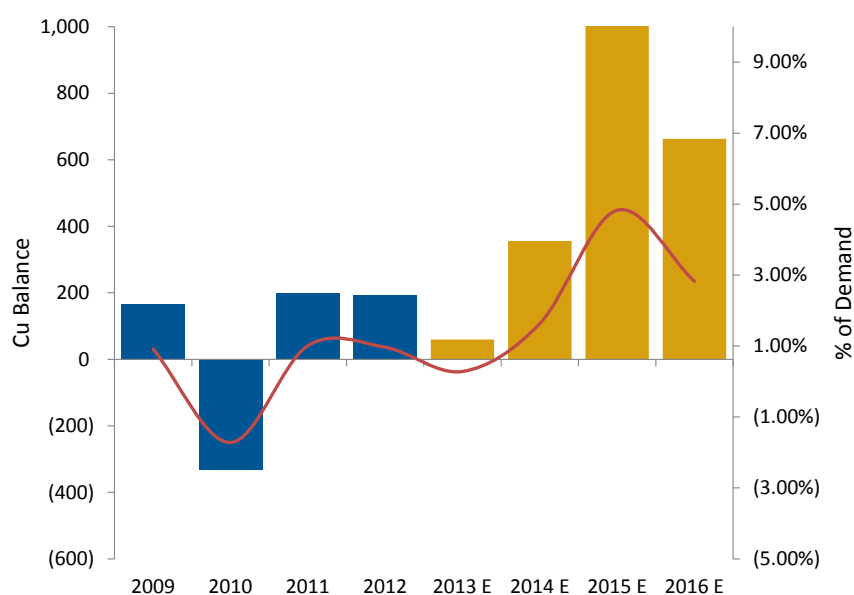
Public forums have been held in villages nearby the project and in the town of Madang. These forums have enabled stakeholders to voice their opinions and MRN notes the high level of ongoing support they have received from the community.

## COPPER MARKET OVERVIEW- SUPPLY SIDE REMAINS THE KEY

NOTE: please see our September 4th note titled "[TOP 10 Reasons the Next Up-Cycle for Base Metals has Begun](#)" for more details.

We base our copper price forecast on conservative base case S&D assumptions for China growth and the project pipeline. The maximum surplus forecast for in 2015 represents only <5% of annual consumption. For comparison, the current Ni surplus is at ~20% of consumption. If China grows at consensus rates, the 2015 copper surplus would fall to only ~3%. Additionally, our base case estimate only accounts for a 4% disruption allowance. Annual disruptions are generally higher at ~6-7%. Further, projects such as Sierra Gorda, Cobre Panama, and Ok Tedi are likely to be delayed (accounting for ~350ktpa). All this leads us to believe that the surplus is likely to be much smaller than expected.

### ***Copper Balance - Potential Peak in 2015, but could be muted***

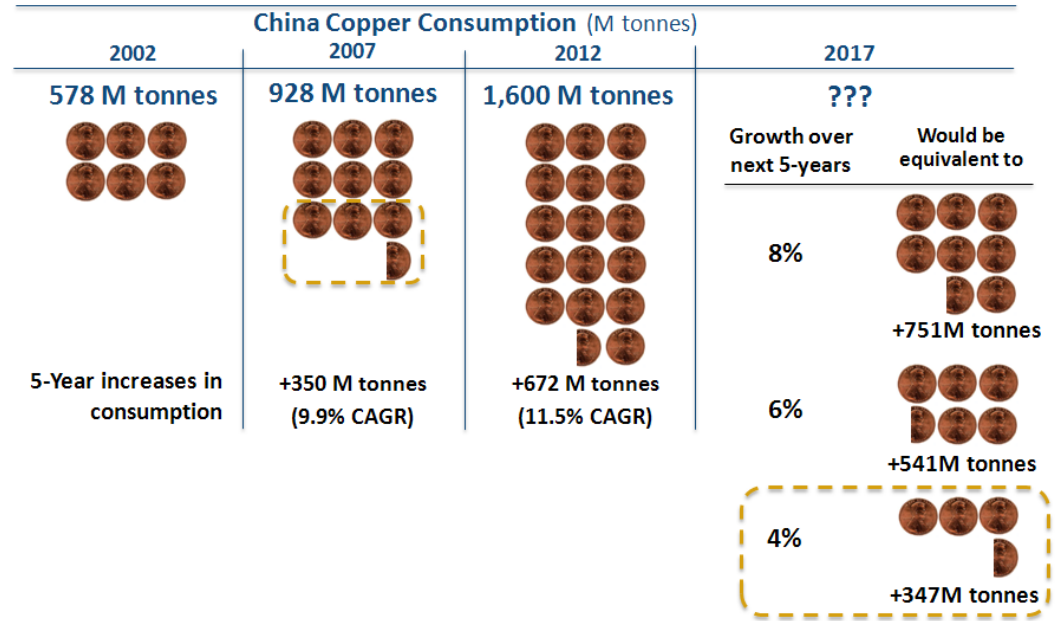


<b>Demand growth</b>					
	<b>% of Cu cons.</b>	2013	2014	2015	LT
China	<b>39.0%</b>	7.0%	6.5%	6.0%	4.0%
Europe	<b>21.0%</b>	0.1%	1.3%	1.5%	1.5%
Asia ex. China & Japan	<b>14.0%</b>	5.8%	6.0%	6.5%	5.0%
North American	<b>10.0%</b>	2.2%	2.5%	3.6%	2.0%
Latin America	<b>4.0%</b>	3.4%	3.8%	3.7%	3.0%
Japan	<b>5.0%</b>	1.3%	1.3%	1.3%	1.3%
Oceania	<b>6.9%</b>	3.6%	3.0%	3.3%	2.0%
Africa	<b>0.1%</b>	3.0%	3.0%	3.0%	3.0%
<b>Weighted average</b>		<b>4.2%</b>	<b>4.3%</b>	<b>4.4%</b>	<b>3.1%</b>

Source: DCM, Intierra, Woods Mackenzie, Bloomberg

We argue that even if China only grows at 8%, 6% or even 4% over the next 5 years, this would still represent a colossal amount of additional copper supply. In fact, if China's copper consumption would grow at only 4% in the next 5 years, this would still be equivalent to the 10% annualized growth rate experienced from 2002 to 2007.

***A 4% YoY Growth Rate for China in 2013-2017 would be the same as the 10% growth seen from 2002-2007***

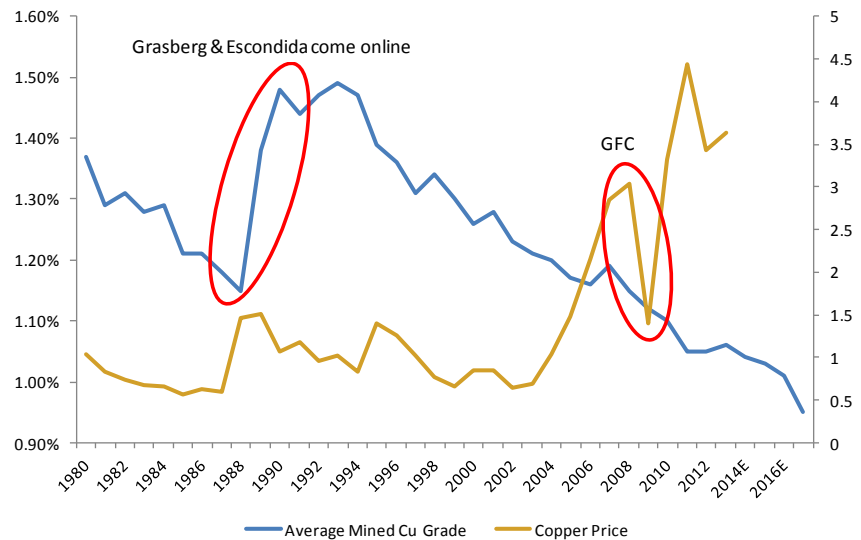


Source: DCM

**Structural challenges include:**

- Declining grades, which mean miners have to "run harder to stand still"

**Declining Copper Grades**



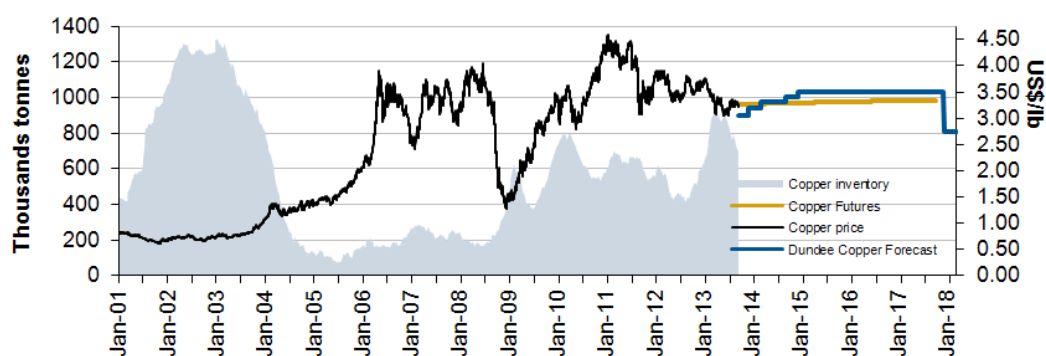
Source: Bloomberg, Dundee Securities

- Increasing depth of discoveries, which increases average exploration expenditures and a project's technical risk
- Rising sovereign/political risk, which can take the form of corruption, labour unrest and permitting difficulties
- Lack of infrastructure, which is present even in developed countries and leads to high-capex projects
- Social license, in our view this is probably the most difficult issue facing global miners and definitely the one that most miners are least equipped for. Permitting risk can remain even when it appears to be resolved and the tradeoff will obviously be higher capital costs
- Resource nationalism: In the more extreme cases of resource nationalism, governments have legislated local ownership and in some cases have even gone as far as nationalization of mineral resources.
- Environmental issues that can lead to legacy liabilities at certain sites rendering these projects uneconomic.

#### Secular challenges include:

- Transitioning end-use demand in China that could mean less intense usage of construction-related metals as the country's economy becomes increasingly consumer based.
- Supply disruptions cause production numbers to fall short of estimates every year.
- Limited EPCM contractor availability that delays engineering work and construction
- Rising major equipment item lead times that result in further hold ups
- Reduced availability of qualified labor that increases the risk of mistake and increases spending overruns.

#### Copper Inventory, Price and Futures



Source: Bloomberg, Dundee Securities

## APPENDIX

### Strong Partner: China Nonferrous

Founded in 1983, China Nonferrous Metal Mining (Group) Co., Ltd. (CNMC) is a large-scale central enterprise under the management of the State-owned Assets Supervision and Administration Commission of the State Council. Its major businesses include the development of nonferrous metal mineral resources, construction engineering, and the relevant trade and technological services. By the end of 2010, CNMC has assets amounting to 50.67 billion RMB. CNMC has been a pioneer among Chinese enterprises to implement the “going abroad” strategy and to carry out international investment and cooperation in nonferrous metal mineral resources field.

Apart from Yandera, The nonferrous metal mining projects built and put into production abroad by CNMC include Chambishi Copper Mine in Zambia, Chambishi 150,000-ton copper smeltery, Chambishi Leach Plant, Chambishi Sulfuric Acid Plant, Tumurtin-Ovoo Zinc Mine in Mongolia, and Thai-China Lead-Antimony Alloy Plant in Thailand. The projects under construction and development include Zambia-China Economic & Trade Cooperation Zone, western ore body of Zambia Chambishi Copper Mine, Myanmar Tagaung Taung Nickel Mine, and bauxite in Laos. In addition, CNMC is negotiating a group of projects in venturous prospecting and development of nonferrous metal resources and carrying out overseas investment cooperation in various forms in nonferrous metal mining industries, which involve copper, aluminum, zinc, nickel, tantalum, niobium, and beryllium.

Now, CNMC is developing nonferrous metal mineral resources in countries around China and in central and southern Africa, and also in countries and regions with developed capital operation in mining industry. It possesses ten million tons of nonferrous metal resources and over 300 million tons of bauxite resources in overseas market and is now after nearly 80 million tons of heavy nonferrous metal resources and two billion tons of bauxite resources. CNMC is the Chinese enterprise that has carried out the most investment cooperation in overseas nonferrous metal mining industry. During the “Eleventh Five-year Plan” period, its investment in overseas market will exceed two billion US dollars and it will promote the export of more than 1.2 billion US dollars worth of Chinese equipment and materials.

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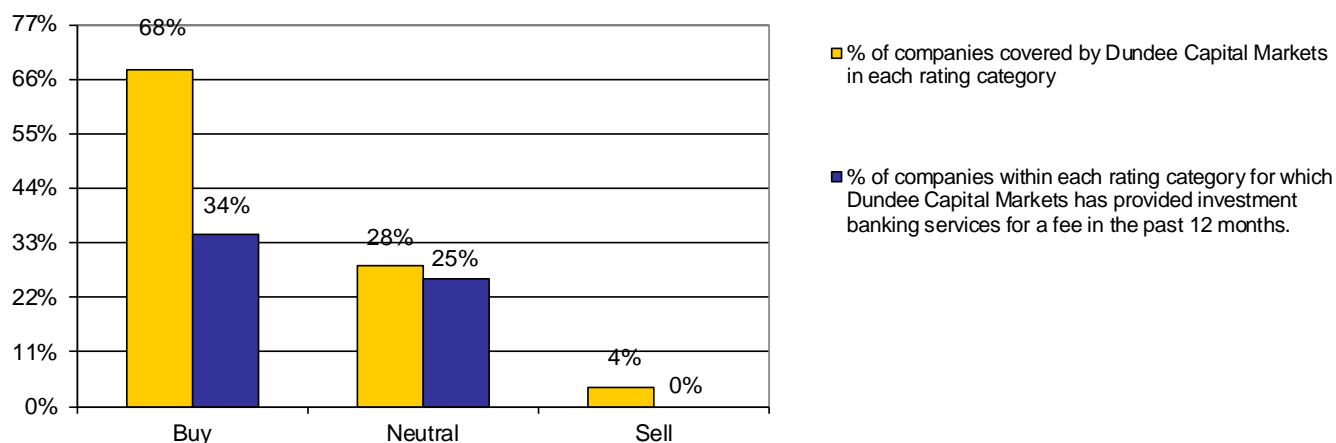
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