

4 July 2018

## Cobalt Blue (COB)

**Robust PFS confirms Thackaringa as the only pure-cobalt project of scale globally. Cobalt Blue remains our preferred ASX cobalt exposure and we see promising potential for a follow up deal with LG near term.**



Pre-market open this morning Cobalt Blue delivered a robust PFS for its Thackaringa cobalt project near Broken Hill in NSW, which is targeting production of ~7.8mlb of cobalt metal in sulphate per annum at a C1 Cash cost of ~US\$12.80/lb over an initial mine life of 12.8 years.

That said, the PFS results were less compelling than our previous forecasts, with the key difference being higher initial capex. While the plant capex of A\$485m *excluding* contingency was only 7.8% above our A\$450m estimate, plant capex of A\$550m *including* contingency was 22% higher and adding the \$23m of pre-stripping, initial capex of A\$573m came in 27% ahead of our forecast.

The other main difference in the PFS compared to our forecasts was more conservative assumptions on cobalt recoveries of 85.5% than the 88.5% achieved in test-work to date, leading to lower production and higher costs. The company is targeting 90% cobalt recovery and will undertake more detailed and larger scale test work as part of the BFS.

### **Cobalt Blue has identified 4 key areas where there is clear potential for improvement in the BFS:**

- **Tailings cost-out:** COB's tailings consultant estimated total tailings cost over the mine life of A\$260m, including up to \$17.5m p.a. in opex for tailings disposal at \$4/t. COB believes there is good potential to reduce this figure and we believe a saving of at least 20% is probably achievable. We estimate a 20% saving in tailings disposal opex represents a potential saving of up to \$4.2m p.a. or ~A\$47m over the life of the project, which would add almost A\$20m to the NPV as show in the table below. A review study will be undertaken in Q3 2018 to identify possible cost saving measures.
- **Improved recoveries:** The 85.5% cobalt recovery assumed in the PFS is more conservative than the 88.5% cobalt recovery achieved in test work to date and the company is targeting 90% recovery in the BFS. Similarly, the assumed sulphur recovery in the PFS is only 64.4% vs. the company's target during the BFS of 75%. We estimate improved cobalt/sulphur recoveries of 88.5%/72.0% would add A\$87m to the NPV as show in the table below. If COB can hit its cobalt/sulphur target recoveries of 90%/75%, on our estimates is would add a material A\$127m to the NPV.
- **Reduced Power cost & use:** Power represents a very large ~22% of COB's site costs and the power needed at Thackaringa will be large, at up to 75MW. COB sees potential for savings on (1) Reducing power *use* via more efficient plant configuration, reducing heat losses, etc and (2) Reducing the *price paid* for power using its position as large wholesale customer to negotiate better pricing, plus potential to use onsite battery storage to limit grid draw during peak pricing periods, etc. We estimate power costs on PFS assumptions of ~A\$510m over the mine life... so a 10% saving on power represents a material ~A\$51m saving over the mine life, representing a potential A\$20m increase in NPV as shown in the table below.
- **Mine life extensions:** As the table below clearly demonstrates, extending the mine life to 20 years+ represents the largest potential NPV upside for Thackaringa (and COB). COB sees potential for a ~20 year mine life at Thackaringa via extensions to known mineralisation at depth and an exploration programme will be conducted in parallel with the BFS. COB also sees potential to extend the project life by treating ore from other sources, beyond Thackaringa.

The potential impact of improvements in these 4 key areas is provided in the table below:

**Thackaringa PFS Results and Potential Impact of BFS Optimisation Studies**

	COB PFS		Tailings Opex saving 20% saving		Improved Recoveries		Power saving on use/cost 10% saving		Longer mine life <sup>#</sup> 20 years		Combined Impact	
			New	Chg	New	Chg	New	Chg	New	Chg	New	Chg
<b>Initial Capex</b>	<b>A\$m</b>	<b>573</b>										
Plant throughput	mtpa	5.25										
Cobalt head grade	ppm	802										
Cobalt recovery	%	85.5%			<b>88.5%</b>	4%					<b>88.5%</b>	4%
<b>Cobalt metal in sulphate</b>	<b>ktpa</b>	<b>3.56</b>			3.69	4%					3.69	4%
Sulphur recovery	%	64.4%			<b>72.0%</b>	12%					<b>72.0%</b>	12%
Sulphur production	ktpa	291			325	12%					325	12%
<b>C1 Cost (post credit)</b>	<b>US\$/lb</b>	<b>12.76</b>			11.71	-8%	12.36	-3%			11.22	-12%
C1 Cost + royalties*	US\$/lb	14.99			13.96	-7%	14.59	-3%			13.45	-10%
AISC*	US\$/lb	15.47			14.88	-4%	15.55	1%			14.37	-7%
Avg Operating Cashflow*	A\$m pa	202			224	11%	210	4%			230	14%
Avg Operating Margin*	%	48%			50%	4%	49%	2%			51%	6%
Mine Life	years	12.8							<b>20.0</b>	56%	<b>20.0</b>	56%
Post-tax NPV <sub>7.5</sub>	A\$m	544										
<b>Post-tax NPV<sub>8</sub>*</b>	<b>A\$m</b>	<b>514</b>	532	4%	600	17%	534	4%	771	50%	935	82%
Change in NPV vs. PFS	A\$m		<b>+18</b>		<b>+87</b>		<b>+20</b>		<b>+257</b>		<b>+421</b>	
<b>Post-tax IRR</b>	<b>%</b>	<b>22%</b>	23%	4%	25%	12%	23%	4%	23%	6%	26%	18%

Source: Company, Blue Ocean estimates. \*Blue Ocean estimate <sup>#</sup>Subject to exploration success

CRU Prices: Avg Cobalt sulphate price of US\$33.80/lb & US\$32.87/lb LT; Avg sulphur price of US\$145/t CIF Australia  
A\$/US\$: 0.75 trending to 0.70 in 2021, flat thereafter

**Near Term Catalysts**

- **Follow deal with LG near term?** We believe the Thackaringa PFS will be sufficient to galvanise LG's interest as a potential long term supply of low-cost cobalt, from a safe, stable jurisdiction. In March, COB agreed a "Strategic First Mover partnership" with LG and a US\$6m placement at \$1.10 for a ~5% stake in COB. LG has committed to provide "capital and technical assistance" and we expect some sort of follow up deal with LG to be announced near-term.
- **Results from tailings optimisation study:** A review study will be undertaken in Q3 2018. Now the PFS has been delivered, the market can quickly assess the valuation impact of any savings on tailings compared to the PFS.
- **FY19 Exploration program to commence shortly:** The commencement of the FY19 exploration program may also include a revised Exploration Target with a deep dive on the geology of each of COB's three cobalt deposits as well as geological explanation about where the most prospective ground is for mine life extensions and when drilling is expected to start. A credible Exploration Target may help the market to begin pricing in a longer potential mine life at Thackaringa.
- **Further test work to improve recoveries:** We expect COB to complete more detailed and larger scale metallurgical test work as part of the BFS, and in our view positive results on this front could have a material impact on valuation (as highlighted in the table above) and the company's share price.

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## Cobalt Blue (COB)

We remain strong believers in the mainstream adoption of Electric Vehicles over the next few years and cobalt is one of the most supply constrained battery-thematic metals and is also one of the most susceptible to supply shocks – with 65% of supply coming from the Democratic Republic of Congo.

A number of market participants are forecasting a continued rally in cobalt prices to US\$40/lb or US\$50/lb over the next few years and if such rally occurs, Cobalt Blue stands to benefit more than peers with 86% of its revenue from cobalt... compared to most Ni/Co or Cu/Co peers with only 30-50% of revenue from cobalt.

As the table below illustrates, with a higher % of revenue from cobalt than peers, for a 10% increase in the cobalt price, COB has superior cobalt leverage on cash flow, earnings and NPV.

### Cobalt Blue's Superior Cobalt Leverage: Impact of a 10% increase in the Cobalt Price

Company	Ticker	Project	Study Level / Date	% Cobalt	% Chg	% Chg	% Chg
				Revenue	Op CF	Earnings	NPV
Cobalt Blue	COB	Thackaringa	PFS / 5 Jul 18	86%	19%	29%	47%
Clean TeQ	CLQ	CleanTeq Sunrise	DFS / 25 Jun 18	42%	6%	7%	12%
Ardea	ARL	Goongarie	PFS / 28 Mar 18	32%	5%	6%	8%
Barra/Conico	BAR/CNJ	Mt Thirsty	Scoping / 5 Oct 17	76%	13%	15%	24%

Source: Company reports, Blue Ocean estimates

Disclosure: I own shares in Cobalt Blue.

Please drop me a line if you would like to discuss,

Cheers,  
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