

Cobalt Blue is developing the Thackaringa cobalt project near Broken Hill (Australia).

The snapshot summary:

- **Resource: 55mt @ 910ppm Co**
- **Exploration Target: 18-26mt @ 800–1,000ppm Co**
- **PFS due mid CY18, targeting:**
  - 5mtpa project
  - Producing 4ktpa cobalt sulphate (8.8mtpa) (more than CleanTeq’s (CLQ) target of ~3.2ktpa)
  - At low cash costs of ~US\$10–12/lb (vs. spot cobalt of ~US\$30/lb)
  - Mine life: ~10 years on existing resource, ~15 years with the exploration target, but ultimately probably ~20 years in our view

### Could Thackaringa be worth more than A\$1bn?

At current cobalt prices of ~US\$30/lb, we believe Thackaringa could be worth A\$1.2bn!

While we won’t know the capex of Thackaringa until the PFS is completed in mid CY18, the table below provide our preliminary valuations of what Thackaringa might look like:

| <b>Potential Valuation of Thackaringa</b> |    |                        |     |     |       |       |
|---|----|------------------------|-----|-----|-------|-------|
| NPV <sub>10</sub> post-tax (A\$m)         |    | Cobalt Price (US\$/lb) |     |     |       |       |
|   |    | 15                     | 20  | 25  | 30    | 35    |
| Mine Life                                 | 10 | (93)                   | 177 | 446 | 716   | 985   |
| (years)                                   | 15 | (35)                   | 310 | 655 | 1,000 | 1,345 |
|   | 20 | 3                      | 399 | 796 | 1,193 | 1,589 |

Source: Company, Blue Ocean estimates

**For context, the current fully diluted Mcap of Cobalt Blue @ 48c is only A\$56m! With ~A\$6.5m in cash (and no debt), Cobalt Blue’s EV is <A\$50m.**

(If you would like a copy of our model please drop us a line)

### What sets Cobalt Blue apart?

Unlike most of the low grade cobalt deposits (most are cobalt/nickel laterites), Cobalt Blue has demonstrated the ability to materially upgrade head grades pre-processing.

In 26 Oct, COB announced it bulk test work results confirming a 819kg sample @ 607ppm was upgraded to 3,326ppm (~5.5x) via simple crush, grind, gravity separation and float.

We have included a link the company's recent release on its bulk metallurgical testwork at the bottom of this email.

## **What does a ~5.5x increase in grade pre-processing mean?**

This means while the front end of the plant (crusher, float cells etc) will be 5mtpa.

The back end of the plant can be *much* smaller than peers... i.e. only 1mtpa. And it's the back end of the plant where the much higher capex equipment sits i.e. This will lead to *major* capex savings for the project and a *major* advantage over many cobalt peers.

Interestingly, Thackaringa's average resource grade is 910ppm (not 607ppm in the bulk sample), so a 5.5x grade uplift implies potential cobalt head grades to the back end of the plant of 4,000-5,000ppm.

## **An elegant solution to acid generation**

The second major success Cobalt Blue has had, is the ingenious method it has come up with to avoid acid generation during processing, which historically has been an a major impediment for this project due to the costs involved.

Thackaringa is essentially a pyrite orebody with the cobalt locked into the crystal lattice.

Historically breaking up the  $\text{Fe}_2\text{S}$  meant liberating  $\text{SO}_2$ , which needs to be captured (to avoid acid rain) and converted into  $\text{H}_2\text{SO}_4$  (which is obviously expensive to store and transport).

Cobalt Blue has come up with an elegant solution: It is proposing to use decomposition of the  $\text{Fe}_2\text{S}$  in an inert atmosphere (no oxygen)... so instead of producing  $\text{SO}_2$  they produce elemental sulphur... The process is called pyrolysis and has been used successfully in gold operations in South America.

This process has been tested on Thackaringa ore at lab scale and it works for recoveries of ~90% from ore to payable cobalt. The bulk testing of this process is underway now and should be completed shortly.

## **Important industry context: Is Cobalt Blue on track to be the only listed pure-cobalt player of scale, in a safe jurisdiction globally?**

With the cobalt price running, as a key battery thematic metal, there are extremely limited options globally for institutional investors looking for pure cobalt exposures:

- ~50-60% of cobalt supply comes from the DRC (sovereign risk is too high for most institutional investors)
- ~95% of cobalt supply as by-product from copper or nickel mines (i.e. % of revenue of cobalt is too small to provide sufficient cobalt exposure)
- Only ~2-5% of the cobalt supply comes from primary cobalt deposits (where % revenue is well over 50% cobalt)

Given the scarcity of viable cobalt exposures, we see potential for major capital inflows into Cobalt Blue from global institutional investors as studies for Thackaringa are completed.

## **Another key advantage – Thackaringa should NOT be an HPAL project**

The other challenge for most nickel/cobalt laterites is the high costs involved in liberating the cobalt. Most require HPAL processing (High Pressure Acid Leach).

While HPAL is a proven technology... the combination of high pressure, high temperature and a highly acidic environment make these projects highly capital intensive and complex.

There is also a long history of capital blow outs and major operational problems for HPAL project (Murrin Murrin, Ambotovy &, Goro to name a few).

Based on the testwork to date, it looks likely the back end of Thackaringa will be a POX... i.e. some pressure and higher temperatures, but much lower than an HPAL project.

**Important Disclosure: I own shares in Cobalt Blue.**

Please find a copy of Cobalt Blue's recent bulk metallurgy testwork results [here](#).

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

Best regards,

Steuart

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