

Market Update

10 September 2021

Highlights

Cobalt Blue Holdings Limited
A Green Energy
Exploration
Company



ASX Code:

COB

Commodity Exposure:

Cobalt & Sulphur

Directors & Management:

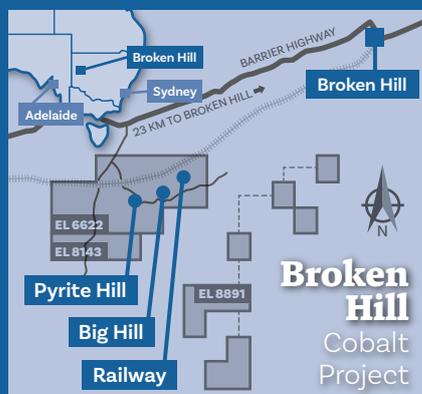
Robert Biancardi Non-Exec Chairman
Hugh Keller Non-Exec Director
Robert McDonald Non-Exec Director
Joe Kaderavek CEO & Exec Director
Danny Morgan CFO & Company Secretary

Capital Structure:

Ordinary Shares at 10/09/2021: **298.5m**
Unlisted options: **33.0m**
Market Cap (undiluted): **\$94.0m**

Share Price:

Share Price at 09/09/2021: **\$0.315**



Cobalt Blue Holdings Limited

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Premium cobalt samples finalised

KEY POINTS

- Premium Mixed Hydroxide Product (MHP) {typically 35–41% cobalt and 3–10% nickel content} produced.
- The Broken Hill Cobalt Project (BHCP) Pilot Plant has produced a variety of high grade, tailored MHP specifications with COB receiving positive feedback.
- The BHCP Global Project Partner search aided significantly by these results.
- Transition to Demonstration Plant remains on target with continuous operations targeted during Q1 2022.

COB's Chair Rob Biancardi, said:

"This is fantastic news for our international partners."

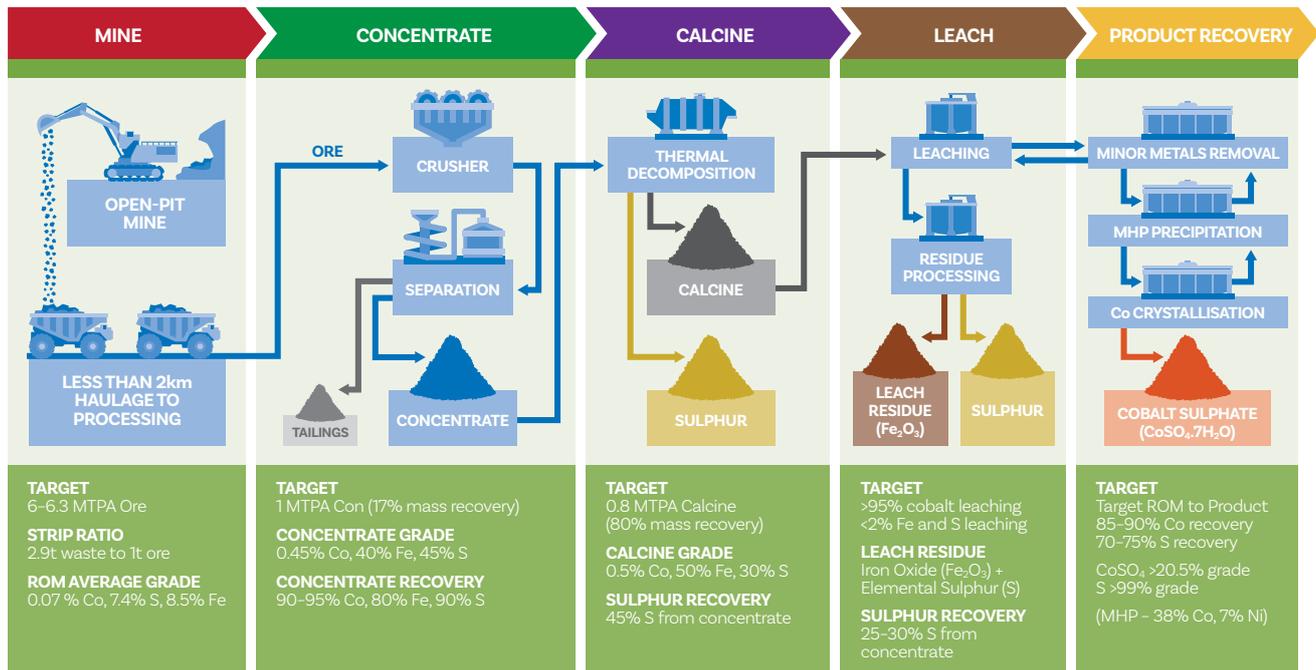
COB's CEO Joe Kaderavek, said:

"The production of such high quality MHP samples in our Pilot Plant is a significant achievement for COB and our Broken Hill team. Looking forward, the transition towards a (24/7) Demonstration Plant to produce ~3,000kg of cobalt samples will greatly assist in our global Project Partner search. The BHCP is a ~20 year, large scale, ethical cobalt producer, enough cobalt for 5 million electric vehicles."

BHCP Pilot Plant Update

The BHCP process flow sheet is shown below in Figure 1. The Pilot Plant comprises circuits for concentration, leaching and product recovery. These have been supported by calcining testwork completed externally at ANERGY (Bunbury WA). Post Pilot Plant operations, COB will expand the circuits to include calcining, and upgrade equipment to permit the Demonstration Plant to operate on a 24/7 basis.

Figure 1 – BHCP Process Flowsheet



The Pilot Plant has been running operationally since early Q2. However, the effects of COVID 19 upon rosters (people movement both inter/intra state) and equipment/parts availability has been to extend the sample program into Q3. We are now happy to announce that all sample cobalt MHP products have been finalised. Partner samples are being or have been dispatched. Looking forward we would expect more freedom to resource shift rosters and equipment/parts availability in Q4 as COVID 19 vaccination rates bring more normalcy to the Australian workplace.

Figure 2 – Pilot Plant MHP in circuit tanks



Figure 3 – Pilot Plant MHP samples – ready for dispatch



Customer Feedback + Optimising product specifications

Hydroxide intermediates represent approximately 75% of total global cobalt trade. The supply side is dominated by production from the Democratic Republic of Congo (DRC) whose contribution is expected to increase over the near term. Hydroxide intermediates are typically purchased by specialist refining companies. Cobalt hydroxide intermediate is sold on a pricing formula with two components, prior to adjustment for penalty elements (impurities). The first is the floating payables which is relative to the underlying cobalt metal price. The second is the cobalt content.

Fastmarkets quote prices for 30% minimum content cobalt intermediate hydroxide, with typical cobalt content of hydroxide from the DRC being 25–40%. Strong nickel credits will likely command a further payable metal for the COB MHP product. Overall, the extremely low level of impurities in the COB MHP product are considered attractive.

During FY20, COB announced its ability to produce a 37% cobalt + 7% nickel MHP at a laboratory scale. The recent Pilot Plant samples (sourcing cobalt from 90 tonnes of ore) produced a range of assays within the following typical limits: 35%–41% Cobalt and 3–10% Nickel.

The Pilot Plant samples clearly surpass the industry benchmark which is used for pricing. Importantly, the Pilot Plant was able to customise the product specification readily within this range. Our intention is to listen to partners to better understand their specific product requirements and optimise our production process towards such goals. The trade-off between product specification/pricing and production costs is critical to maximising the BHCP operating margin. Put another way: “what is the highest margin cobalt product we can consistently produce?”. From Q1 2022, the larger scale Demonstration Plant will allow us to target such product on a 24 hour/7 day continuous operating basis.

Feedback received to date has been largely technical in nature and focused upon sample specifications and whether the customer can readily process the cobalt/nickel balance as well as the residual trace elements contained within. To date, we have received strong positive feedback on these samples.

We aim to keep running the Pilot Plant beyond the initial sample program. The additional runtime will allow us to better understand equipment performance. Secondly, additional cobalt materials (included some cobalt sulphate as requested to partners already receiving MHP) will be produced. We consider it likely that further sample requests will be made. To date one partner has asked for a much larger MHP sample, that will be used as a basis for qualifying the BHCP into their production chain. It is anticipated that further larger scale sample requests will be made. Ultimately, it is intended that the larger scale Demonstration Plant will be used to produce these scale samples.

Transition to Demonstration Plant

The transition to a larger scale Demonstration Plant is well underway. The Demonstration Plant will target >3,000 tonnes of ore as feedstock to produce ~3,000 kgs of MHP and cobalt sulphate. We expect to have the Demonstration Plant achieve continuous operation (24/7) during Q1 2022, with the larger samples produced shortly thereafter (the scale of the facility will allow >100kgs cobalt samples to be produced in under a week).

The scale of the Demonstration Plant is globally unique for a greenfield cobalt project and represents a significant de-risking step by end Q1 2022. The facility allows COB to make large scale, multiple cobalt products whilst assessing the suitability of key equipment and process conditions.

Key new equipment includes a kiln and sulphur recovery circuit, larger pressure oxidation reactors, and increased filtration capacity for MHP. Whilst the install does involve some larger equipment, the step change in production scale of cobalt samples is primarily due to operating the plant on a 24/7 basis. COB is taking a long-term approach and working closely with equipment vendors who can service both the Demonstration Plant needs, and the full scale BHCP plant.

To date the Pilot Plant has confirmed that the COB process can successfully be operated to treat samples of BHCP ore and produce ‘clean’ MHP. The process conditions such as oxygen and reagent usage, leach residence times, temperature and pressures are in-line with information from the [Pre-Feasibility Studies](#). Further, the Pilot Plant has provided an opportunity to evaluate equipment suitability and materials of construction for pumps, valves, fittings, tanks, etc.

In addition to cobalt and sulphur samples for offtake assessment, the Demonstration Plant will also provide plant engineering design data for the Feasibility Study. Outside of BHCP needs, the Demonstration Plant will remain in place to provide test work facilities for other COB projects as they arise (refer to Cobalt in Waste Streams Project below).

Our Commercial Strategy

In April 2021 we announced a strategic partnership with Cutfield Freeman and Co. Cutfield Freeman is a global specialist resources corporate advisory business, having successfully advised on over 150 mandated transactions across 50 countries.

The partnership role includes:

- Global Project Partner Search + M&A Advice – search for and engage with project partners. This is a critical step in financially de-risking the project.
- Financial Advisory – identify potentially viable funding options and execution plans.
- Capital Raising – identify and source providers of senior and junior debt, and alternative financing sources.

The targeted spread of the global Project Partner search includes battery industry participants, electric vehicle manufacturers, mining companies, commodity trading houses, financial institutions, government bodies and royalty/commodity streaming entities. The Project Partner search and capital raising programs are underway, with an active dataroom already in use.

The parallel release of cobalt and sulphur samples, a process that will continue with the Demonstration Plant, is a strong sideline as some of the above participants will also receive these samples.

BHCP – a 20 year, large scale cobalt source

The BHCP will target 3,500 tpa cobalt as either MHP or cobalt sulphate. That's enough cobalt units to power over 5 million electric vehicles. The BHCP represents a large volume (about 8% of non African production), long dated cobalt hedge, producing 67,000 t of cobalt (MHP) at a cash operating cost ~US\$10/lb for ~20 years of mine life. Compared to the following price information a handsome margin is anticipated:

- US\$28.0/lb – Cobalt futures (COMEX Dec 2023) price.
- US\$27.5/lb – COB price forecast (utilised in the BHCP Project 2020 Update).
- US\$25.0/lb – 30 year average real term price.

In contrast, a large cobalt consumer looking to financially hedge their cobalt needs is limited to “paper” hedging ~1,200t of cobalt metal equivalent (approximate total size of CME cobalt futures market).

The BHCP is a rare primary cobalt project, and that provides for a much lower capital intensity (US\$ capital expenditure / cobalt units produced) than its peer group. Based on current industry data the BHCP has capital costs (estimated US\$400m) of 25–35% of its global greenfield peer group.

As reported in the *Broken Hill Project Update 2020 announcement* (16 July 2020) the (Post Tax) Net Present Value (NPV) of the BHCP is A\$554m¹ (~A\$1.80/share) assuming a US\$27.5/lb cobalt price (plus inputs as per the announcement, including the production of nickel and sulphur). For COB investors, a 10% increase in the long term cobalt pricing will increase the reported NPV by ~30%.

Cobalt in Waste Streams Project

COB has launched its Cobalt in Waste Streams Project, with initial work focussed on:

- Mining Waste – mining waste streams including both dormant tailings and current operations.
- Battery recycling (Black Mass) – spent and recycled cathode material.
- Industrial Waste – company specific waste streams.

COB anticipates that first Cobalt in Waste Streams Project test work will commence from late 2H 2021, followed by discussions for commercial development with relevant stakeholders. The Cobalt in Waste Streams Project is run in parallel with development work for the BHCP as shown below.

BHCP – Timeline

The Demonstration Plant will continue to operate over Q2 2022 to provide a larger scale and continuous operating baseline for BHCP Feasibility Study purposes, whilst simultaneously allowing further investor (debt and equity) assessment. In parallel to BHCP technical support, the Demonstration Plant facility will also be used to support our Cobalt in Waste Streams Project. We remain focussed on adding further projects to our portfolio.

1. This amount is the NPV per the Production Target and the value engineering study (including nickel credits). The forecast financial information derived from the production target and the value engineering study was first announced by the Company on 16 July 2020 in Broken Hill Cobalt Project Update 2020. The Company confirms it is not aware of any new information or data that materially affects the information included in that announcement and all material assumptions and technical parameters underpinning the production target, value engineering study and the forecast financial information derived from such, continue to apply and have not materially changed.

Figure 4 – BHCP Timeline

	2019	2020	2021	2022	2023
Broken Hill Cobalt Project					
Business Achievements	Mitsubishi – Sulphur Agreement 100% Project Ownership		Global Cobalt Sample program – Mid 2021	Cobalt Qualification Program	Final Investment Decision – Q1 2023
Technical Studies	Resource upgrade Drilling: +9,500m Resource: 111Mt	Project Update 2020 – July 2020	Feasibility Study	Feasibility Study and Approvals – Q4 2022	
Metallurgical Studies	Concentration – Pilot Scale Testwork		Pilot Plant – Mid 2021	Demonstration Plant – 1H 2022	
Environmental Approvals	CPDP Submitted	Scoping Report – Jan 2020 SEARs issued – Feb 2020		EIS Submission – Q4 2022 SSD Determination – Q4 2022	
Partnerships					
Business Achievements			Cobalt in Waste Streams project – from 2H 2021		
	ACHIEVEMENTS			GOALS	

Electric Vehicles (EVs) – the role of cobalt.

Cobalt provides stability and allows superior EV battery energy density and performance. It is not essential in all EV batteries, however the performance of cobalt-based batteries strongly supports the mass market passenger vehicle and sport/luxury vehicle markets.

The trend to increase nickel content in the cathode is reaching limits. This “cobalt thrifting” is a natural market response. As battery technologies develop, purity remains key for raw materials and battery performance – hence the COB focus on the BHCP cobalt product specifications. According to Bloomberg New Energy Finance the cobalt market share of EV batteries will remain > 80% over the next decade.

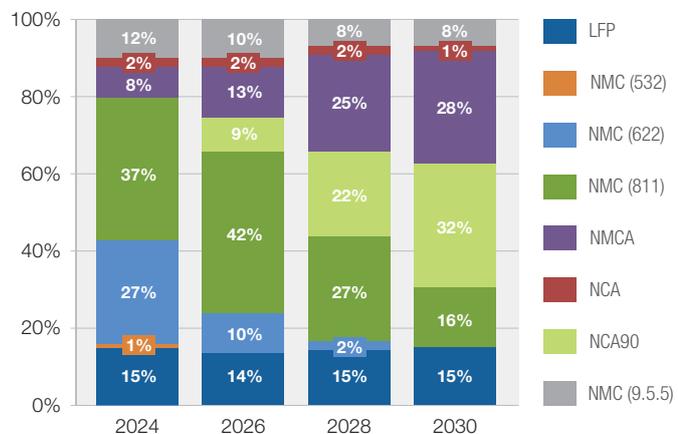
Figure 5 – Cobalt = Superior Battery Performance/Cobalt EV battery market share

NCMs combination of energy density and stability makes it the EV material of choice

	LFP	NCA	NCM
Energy Density	Ordinary	Excellent	Excellent
Power Density	Ordinary	Good	Good
Stability	Excellent	Good	Excellent
Lifespan	Excellent	Good	Good
Cold Temperature Performance	Ordinary	Excellent	Excellent

■ Excellent ■ Good ■ Ordinary

Source: Citi Research



Source: Bloomberg New Energy Finance

LFP = Lithium Iron Phosphate (non-cobalt) battery; NCM = Nickel Cobalt Manganese battery, C = Cobalt, N = Nickel, M = Manganese, A = Aluminium Oxide.

We can see that cobalt demand will rise in response to the global rollout of electric vehicles and energy storage systems.

Cobalt Blue Background

Cobalt Blue Holdings Limited (ASX: COB) is an exploration and project development company. Work programs advancing the Broken Hill Cobalt Project in New South Wales continue. Our ambitious goals are subject to funding availability. Cobalt is a strategic metal in strong demand for new generation batteries, particularly lithium-ion batteries now being widely used in clean energy systems.

Looking forward, we would like our shareholders to keep in touch with COB updates and related news items, which we will post on our website, the ASX announcements platform, as well as social media such as Facebook (f) and LinkedIn (in). Please don't hesitate to join the 'COB friends' on social media and to join our newsletter mailing list at our website.



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This announcement was approved by the Board of Directors.

Previously Released Information

This ASX announcement refers to information extracted from the following reports, which are available for viewing on COB's website <http://www.cobaltblueholdings.com>

- 05 July 2021: Transition to Demonstration Plant
- 31 March 2021: Cobalt in Waste Streams Project
- 11 February 2021: Pilot Trial – Calcine testwork underway
- 21 December 2020: Pilot Plant – Progress Update
- 24 August 2020: Pilot Plant Update – 2nd Delivery of Major Equipment Received
- 16 July 2020: Broken Hill Cobalt Project 2020 Update
- 14 July 2020: BHCP testwork – High purity cobalt and sulphur products
- 28 April 2020: Mixed Hydroxide Product (MHP) testwork delivers premium product
- 02 March 2020: Pilot Plant Update – Critical Equipment Received
- 09 December 2019: Pilot Plant Update
- 24 June 2019: Concentrate Circuit (Pilot Trial) program successfully completed

COB confirms it is not aware of any new information or data that materially affects the information included in the original market announcement, and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed. COB confirms that the form and context in which the Competent Person's findings presented have not been materially modified from the original market announcement.