

Market Update

14 July 2020

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
Robert Waring Company Secretary

Capital Structure:

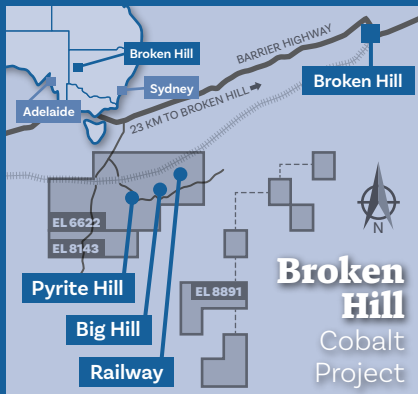
Ordinary Shares at 14/07/2020: **159.9m**

Options (ASX Code: COBO): **5.6m**

Market Cap (undiluted): **\$16.0m**

Share Price:

Share Price at 14/07/2020: **\$0.10**



Cobalt Blue Holdings Limited

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BHCP testwork – High purity cobalt and sulphur products

COB produces 20.8% cobalt sulphate suitable for lithium ion battery market and 99% grade sulphur.

KEY POINTS

- Broken Hill Cobalt Project (BHCP) testwork has now achieved a series of product benchmarks for cobalt sulphate, elemental sulphur and mixed hydroxide precipitate, which will be used for offtake marketing purposes with commercial customers.
- Earlier MHP testwork (Mixed Hydroxide Product (MHP) testwork delivers premium product) produced a 37% Co and 7% Ni premium MHP with low impurities, from testwork on BHCP ore samples.
- 20.8% cobalt sulphate heptahydrate has been produced by refining the MHP. This meets industry benchmark of 20.5% purity for battery manufacture, as traded on Fastmarkets: cobalt sulphate 20.5% Co basis exw China.
- The key by-product for BHCP is elemental sulphur, and COB has now produced 99.3% grade elemental sulphur samples.
- COB is finalising a 2020 Project Update and Ore Reserve Statement for the BHCP.

Cobalt Blue's Chairman, Rob Biancardi, said: "We are excited to announce these premium cobalt and sulphur product results. Our extensive testwork demonstrates that the BHCP can produce high purity, battery ready cobalt sulphate that will power the electric vehicles of the future."

Introduction

The two key products to be produced and sold from BHCP are cobalt sulphate heptahydrate and elemental sulphur. COB is pleased to announce the recent testwork results confirm that high-purity products can be achieved using the COB process for recovery of metals from pyrite. Starting with drill samples from BHCP deposits, COB has now completed a series of testwork programs culminating in the production of cobalt sulphate, elemental sulphur and Mixed Hydroxide Product (MHP) samples. The testwork was mainly completed at ALS Metallurgy (Burnie and Perth), with specialist services provided by Harper International (furnace testwork) and Enersul (elemental sulphur processing).

The production of these final refined product samples will now be followed by pilot-scale trials in the purpose-built COB pilot plant at Broken Hill. COB will use the product samples in discussion with strategic partners – as per the cobalt products program (Cobalt Product and Sulphur Sample Program) and the sulphur product assessment agreement with Mitsubishi Corporation (COB-Mitsubishi Corporation Sulphur Agreement).

Samples of cobalt sulphate will also be provided to the Australian Future Batteries Industries – Co-operative Research Centre (<https://fbicrc.com.au>), for processing into cathode precursor, along with other Australian sourced raw material – nickel sulphate (NiWest, IGO), lithium hydroxide (Tianqi Lithium Australia), and manganese sulphate (Pilbara Metals Group).

Cobalt sulphate heptahydrate

As announced on 28 April 2020, COB produced a mixed cobalt-nickel hydroxide grading 37% cobalt and 7% nickel. This has now been refined to produce cobalt sulphate heptahydrate crystals and a nickel sulphate solution. Impurities were removed using conventional ion-exchange and solvent extraction techniques. The final cobalt sulphate crystals were obtained by evaporative crystallisation under vacuum. The nickel sulphate solution was a by-product of the process and will be subject to further studies for production of nickel sulphate crystals.

The cobalt sulphate purity achieved >20.8% purity. The sample is compared to the typical specifications (based on nine leading global suppliers) for cobalt sulphate heptahydrate used in manufacturing battery cathode precursors, as shown in Table 1. The crystals are shown in Figure 1.

Figure 1 – **Cobalt Sulphate Heptahydrate Crystals**
(ex BHCP) (5x5mm grid)



Table 1 – **Cobalt Sulphate purity**

Metal	Units	COB	AVG 9 producers
Co	%	>20.8%	>20.5
Al	ppm	2	<10
As	ppm	<1	<5
Ca	ppm	<0.01	<10 (can be up to 100)
Cd	ppm	<0.001	<10
Cr	ppm	<0.01	<5
Cu	ppm	1	<10
Fe	ppm	<1	<10
K	ppm	0.6	<5 (can be up to 100)
Mg	ppm	27	<20 (can be up to 100)
Mn	ppm	5	<10 (can be up to 100)
Na	ppm	128	<20 (can be up to 100)
Ni	ppm	<10	<10 (can be up to 100)
Pb	ppm	<0.05	<10
Si	ppm	<0.5	<20
Zn	ppm	<2	<10

Elemental Sulphur

COB has produced a concentrate from pilot testwork treating 45 t of RC chips. A ~150 kg sample of concentrate was processed by Harper International for conversion of pyrite into pyrrhotite and elemental sulphur. The elemental sulphur was condensed from the kiln off-gas, and then processed by Enersul into sulphur prills. The sulphur purity was established to be >99.3% purity as shown in Table 2. The prills are shown in Figure 2.

Figure 2 – **Prilled Elemental Sulphur** (ex BHCP) (5x5mm grid)

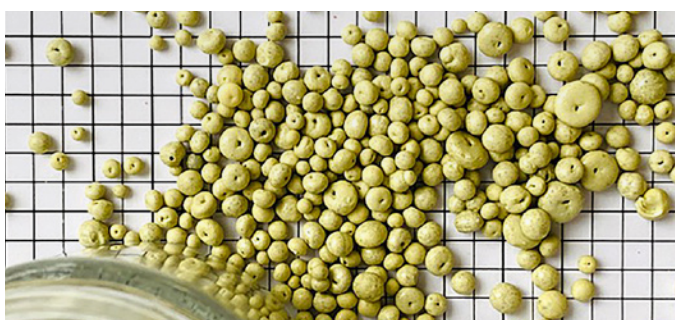


Table 2 – **Elemental Sulphur Purity**

Al	600	ppm
Ca	160	ppm
Co	<20	ppm
Fe	0.10	%
Mg	60	ppm
Na	100	ppm
SiO ₂	0.45	%
S	99.3	% by difference

Looking forward, the BHCP will be one of the few producers of elemental sulphur for commercial sale in South East Asia.

2020 Project Update and Ore Reserve Statement to be released shortly

COB has previously announced its intention to release an updated Ore Reserve Statement and supporting studies in mid-2020. COB expects the results to significantly improve the BHCP economics delivered as part of the 2018 PFS. The 2020 Project Update is expected to be released shortly.

Testwork update – large scale furnace work.

In addition to the testwork described above, BHCP sample concentrate (7.5 tonnes) is currently being stored at ANSAC (ANERGY) in Bunbury WA in preparation for calcine (furnace) testwork. After thermal decomposition, this calcined material will be moved to the COB Pilot Plant (Broken Hill). The calcined material will be used for leaching and metal recovery trials, whilst providing approximately 1 tonne of elemental sulphur for assessment by Mitsubishi Corporation.

The availability of personnel to run these trials has been affected because of business responses related to the COVID-19 pandemic however we expect the sample will be available in time for pilot plant commissioning later in the year. We expect that the testwork will be conducted over the course of Q3 2020.

Pilot Plant update – expected commissioning in Q4

A key stepping stone on the Company's development path is to build a metallurgical testing centre in Broken Hill. This centre will scale from an initial Pilot Plant Operation (producing ~100-300 kilograms of cobalt sulphate from 90 tonnes of ore) to a larger scale fully integrated Demonstration Plant (producing 1–2 tonnes of cobalt sulphate using up to 2,000 tonnes of ore). The results will form the evidentiary basis for the engineering designs and cost estimates for the BHCP Feasibility Study. Equipment, for the pilot plant has now arrived on site in Broken Hill and is currently in the process of installation.

BHCP Timeline

Overall, the development timeline to 2022 is shown in Figure 3.

Figure 3 – COB's Development Timeline

	2017	2018	2019	2020	2021	2022
Business Achievements	IPO	LGI – Cobalt First Mover	Mitsubishi – Sulphur Agreement 100% Project Ownership	Global cobalt sample program – Q4 2020		Final Investment Decision – H1 2022
Technical Studies	Resource upgrade Drilling: +8,000m Resource: 55Mt Scoping Study	Resource upgrade Drilling: +12,500m Resource: 72Mt Pre Feasibility Study	Resource upgrade Drilling: +9,500m Resource: 111Mt	Ore Reserve Update – Q2 2020		Feasibility Study and Approvals – Q1 2022
Metallurgical Studies			Concentration – Pilot Scale Testwork	Pilot Plant – Q4 2020	Demonstration Plant – Q2 2021	
Environmental Approvals			CPDP Submitted	Scoping Report – Jan 2020 SEARs issued – Feb 2020	EIS Submission – H2 2021	SSD Determination – H1 2022
	ACHIEVEMENTS			GOALS		

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. COB's 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 authorised 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>

- 28 April 2020: Mixed Hydroxide Product (MHP) testwork delivers premium product.
- 06 April 2020: COB Partnerships – Testwork Success + QLD Minerals Initiatives
- 31 March 2020: Project update and Business Impacts of COVID-19 discussed
- 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
- 31 May 2019: COB-Mitsubishi Sulphur Agreement
- 04 April 2019: Significant Thackaringa Resource Upgrade
- 26 February 2019: Testwork Update
- 04 July 2018: Thackaringa Pre Feasibility Study Announced

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.

Competent Person's Statement

The information in this report that relates to Metallurgical Testwork Results or Engineering Design Studies is based on information compiled by Dr Andrew Tong, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Dr Andrew Tong is engaged by Cobalt Blue Holdings as Executive Manager. Dr Andrew Tong has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 JORC Code. Dr Andrew Tong consents to the inclusion in the report of the matters based on his information in the form and context in which they appear.