Market Update

CobaltBlue
green energy technology

03 August 2023

Cobalt Blue Holdings Limited

A Green Energy Exploration Company

ASX Code: **COB**

Commodity Exposure:

Cobalt & **Sulphur**

Directors & Management:

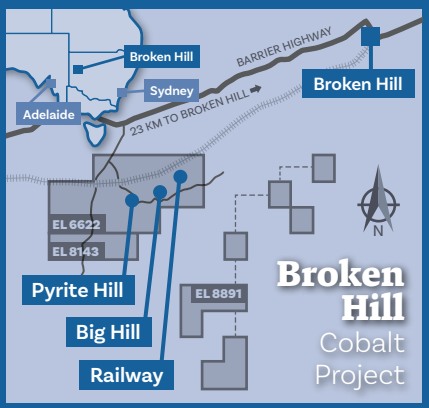
Robert Biancardi	Non-Exec Chairman
Hugh Keller	Non-Exec Director
Robert McDonald	Non-Exec Director
Joe Kaderavek	CEO & Exec Director
Danny Morgan	CFO & Company Secretary

Capital Structure:

Ordinary Shares at 03/08/2023:	**370.1m**
Unlisted options/rights:	**10m**
Market Cap (undiluted):	**$141m**

Share Price:

Share Price at 03/08/2023:	**$0.38**



Cobalt Blue Holdings Limited

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Highlights

Demonstration Plant success. Refinery Development Program launched.

KEY POINTS

- **BHCP Demonstration Plant:** Successful operations continue with targeted continuous runs completed. Operations over recent weeks have delivered Mixed Hydroxide Precipitate (MHP), ranging from smaller samples for analysis and assessment to larger samples for use in engineering studies needed to evaluate and specify equipment for the Broken Hill Cobalt Project (BHCP) processing facility. Samples produced continue to be evaluated internationally as part of our partner program.
- **Refinery Development Program:** COB is commencing a raw materials testing program, sourcing a broad range of cobalt rich materials representing global cobalt supply. The intention is to trial up to 5 tonne samples from third-party suppliers and produce cobalt sulphate on a 1:50 scale basis.
- **Refinery Permitting:** COB has commenced discussions with West Australian Government regulators on the permitting pathway for the cobalt sulphate refinery.
- **Strategic alignment of refinery business:** COB is aiming to be one of the first critical minerals projects to deliver directly into the Allied Supply Chain created by the US Inflation Reduction Act (IRA) and EU Critical Raw Minerals Act (CRMA).
- **Emma Jenkins** joined COB on Monday 3 July 2023 as a Human Resources Executive – People and Culture. Beyond managing Human Resource functions in Cobalt Blue's corporate and operational locations, Emma will also be working on future HR requirements in Broken Hill and the cobalt refinery in Kwinana.

Commenting on recent achievements, Cobalt Blue's Chief Executive Officer, Joe Kaderavek said: *"COB is finalising BHCP technical studies in parallel with successful operation of our large scale Demonstration Plant. We are excited to announce a refinery development program, preparing us to refine third party material supporting future refinery operations and our focus upon the rapidly evolving Allied Nation Supply Chain."*

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BHCP Definitive Feasibility Study

COB is managing the delivery of the BHCP Definitive Feasibility Study (DFS). Three engineering firms have been contracted to provide design and costings as per the following allocation of expertise:

- Worley are completing process plant design and review of the COB test work program (inclusive of the Demonstration Plant).
- GHD are designing the non-process plant infrastructure and tailings/mine waste management (co-disposal in integrated waste landforms). GHD are also preparing the EIS and associated permit applications.
- SRK are preparing the resource and reserve statements, based on the resource block model and mining studies.

COB is delivering all the other aspects of the DFS.

Demonstration Plant Update

Successful operations continue at the Demonstration Plant, with targeted continuous runs completed. These have provided engineering data for the DFS and production of MHP for supporting studies including thickening, filtration, materials handling, bagging, and down-stream refining into cobalt sulphate. Samples produced continue to be evaluated internationally as part of our partner program.

The plant will continue to be operated through 2023 and into 2024 (beyond DFS delivery) to provide further evaluation of:

- Equipment performance – assisting with equipment selection and materials of construction durability/suitability.
- Optimisation strategies:
  - developing improved procedures that can be translated to the commercial plant.
  - producing samples of solids and liquids for supporting studies – e.g. filtration equipment selection at vendor laboratories.
  - generating stack emissions data – e.g. scrubber off gas characterisation.
  - flowsheet optimisation – e.g. impact of operating temperatures on water evaporation/balance.

These evaluations will also provide significant information for detailed design studies that follow on from the DFS. These continued operations also allow for third-party due diligence studies for project financing, and ultimately training future operators and developing documentation for commissioning of the commercial plant.

Over the longer term, the Demonstration Plant will transform into a Metallurgical Testing Centre for new COB projects.

Operations update

The Demonstration Plant operating philosophy is to treat packages of feed through the circuits. Typically, the targets are 30 tonne packages of feed through the calcine circuit and 10 tonne packages of feed through the leach circuit. These quantities represent approximately 100 hours of continuous operation for respective circuits, excluding ramp up and shutdown periods. Each 'package' then allows COB to evaluate specific operating parameters or equipment arrangements.

Figure 1 – **Sulphur collection tank**

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The recent installation of a sulphur collection tank in the kiln system (Figure 1) supports unrestricted calcine operations, allowing extended steady state operations. In conjunction with the successful commissioning and operations of the inline dust filter, the kiln has delivered a number of operating campaigns of >100hrs without issue. These operations have resulted in the production of tonnes of clean sulphur product (Figure 2), and a number of packages of high quality magnetic concentrate feedstock for the leach circuit. Tighter control of product quality from the calcine circuit has resulted in smoother and stable operations of the leach circuit.

Figure 2 – **Sulphur in the condensation tank and after emptied from the tank**

The leach circuit has now delivered multiple 10 tonne package operating campaigns, each with >100hrs of steady state runtime. The high-quality feed produced from the calcine circuit has eliminated process upsets in the leach circuit and enabled the reliable operations of the process required to bring cobalt into solution at the requisite levels for production of MHP. In conjunction with recent improvements in process control methodologies and overall circuit balance, the Demonstration Plant has transitioned from short campaigns for troubleshooting plant and process to being a reliable platform to demonstrate the repeatability and robustness our proprietary processing technology.

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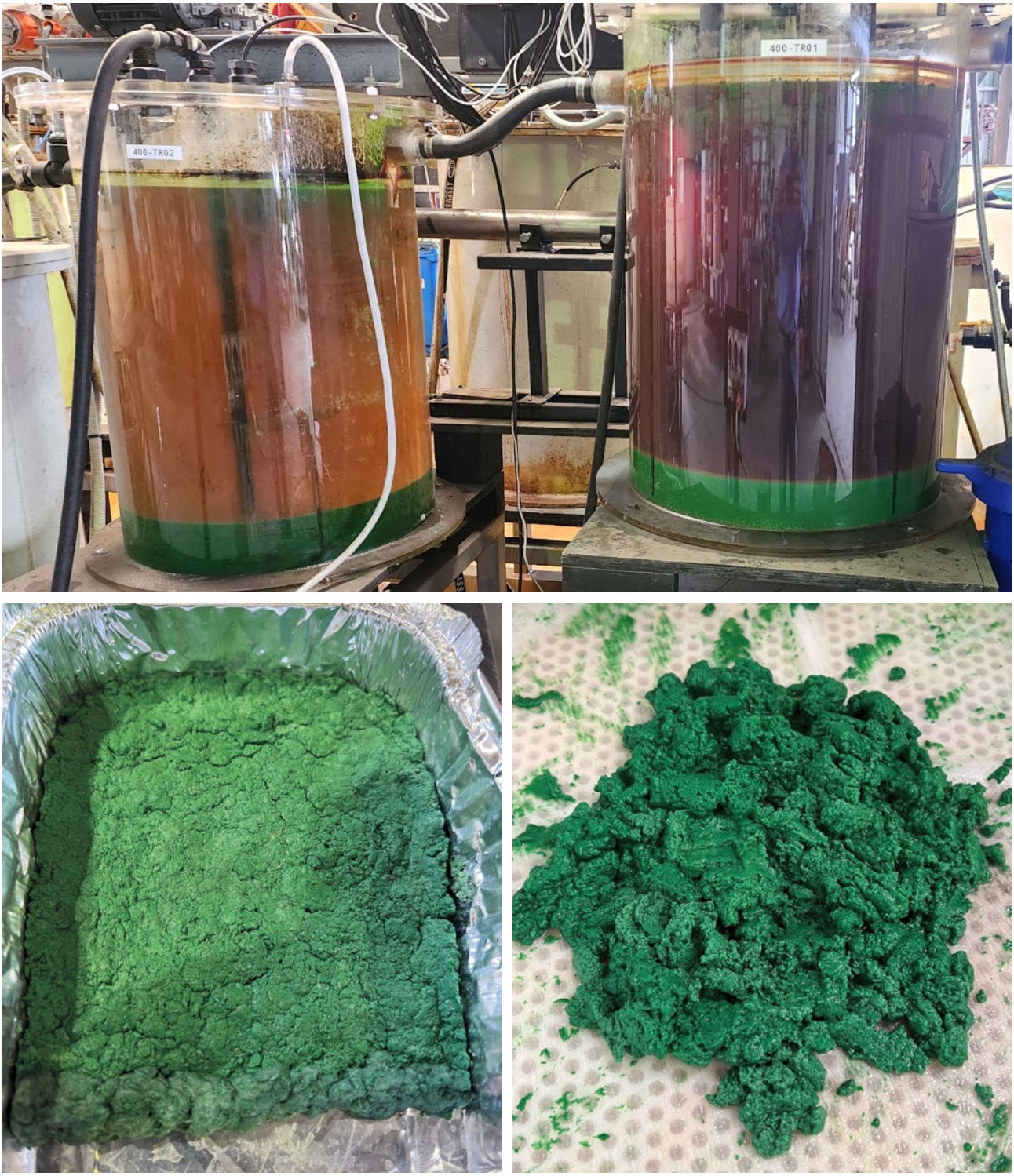
Figure 3 – **MHP in tanks and post drying**



Operations over recent weeks have delivered multiple MHP packages, ranging from smaller samples for analysis and assessment to a larger samples for use in engineering studies needed to evaluate and specify equipment for the BHCP processing facility.

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Refinery Development Program

COB is engaging with a potential partner for the refinery. Our potential partner is a leading Japanese multinational company that specialises in the production and trading of commodities. The company has a global presence with subsidiaries and affiliates in several countries. They have established partnerships and collaborations with companies worldwide to further advance their expertise in technologies and explore new markets. Our potential partner has a large trading arm looking to supply their Japanese partners in major global Electric Vehicle markets, including the United States.

Cost Study

COB is preparing an engineering cost estimate for a cobalt sulphate refinery in Kwinana, Western Australia. This study will be used to assess the economic merits of building and operating a plant to process a minimum of 3,000 tpa cobalt (target), with expansion to 7,500 tpa cobalt /nickel when BHCP feedstock is available.

Piloting Program

In addition to the cost study, COB is commencing a raw materials testing program. The intention is to trial up to 5 tonne samples from third-party suppliers. Samples would typically be cobalt hydroxide or cobalt-nickel hydroxide or other intermediates from existing operations. Each sample would take approximately 4–6 weeks to be tested.

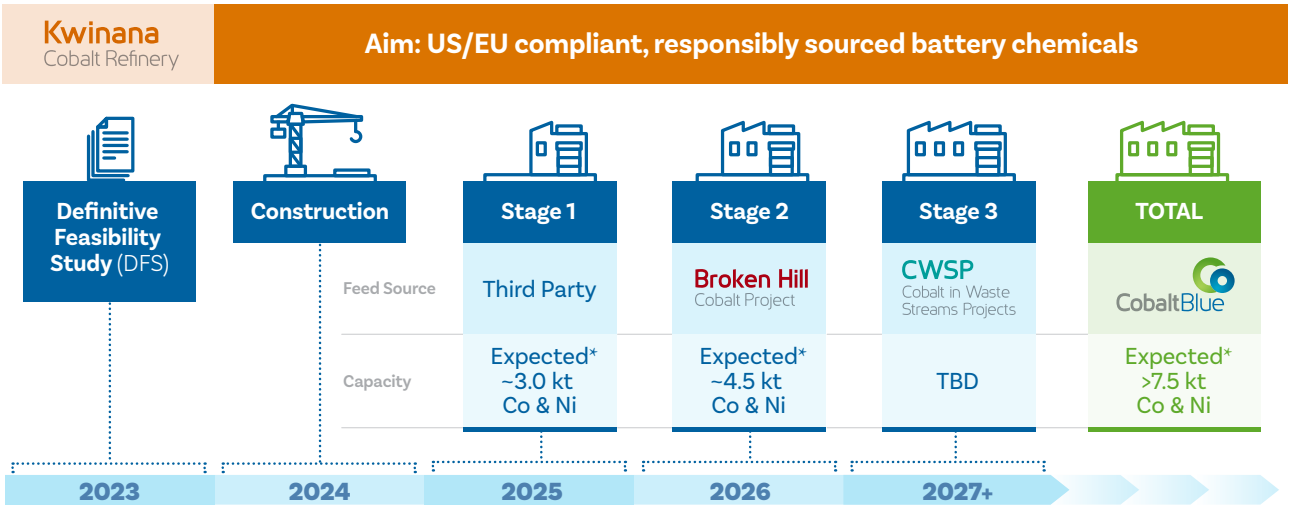
The current cobalt sulphate refinery equipment in the Broken Hill Demonstration Plant will be upscaled to a nominal production rate of 200 kg/day cobalt/nickel equivalent. This represents a 1:50 scale compared to the initial refinery throughput of 3,000 tpa cobalt. COB will utilise the existing Broken Hill based Demonstration Plant footprint and ancillary equipment already present in Broken Hill.

Samples will be provided under commercial-in-confidence agreements, due to the sensitivity of disrupting existing supply contracts and chains. COB is looking to source a broad range of cobalt rich materials representing the global industry that currently complies with Allied Nation supply chain requirements.

There are a number of both technological and strategic benefits to testing bulk raw materials that will significantly de-risk the project; including:

- Evaluate suitability of processing third-party feedstocks and provide basis for negotiation of supply contracts.
- Identify and characterise waste generated by the refinery, and thereby define appropriate waste management strategies.
- Improve operating procedures and philosophies, which lead to better plant design and lower risk commissioning and operations of the full scale refinery.
- Confirm capabilities to produce high purity cobalt sulphate suitable for sales to cathode precursor manufacturers, from a range of feed stocks.

Figure 4 – **Cobalt Blue Cobalt Refinery – Estimated Schedule**



Timetable and goals are indicative. Capacity refers to metal content basis. Source: Cobalt Blue Holdings Limited.

** These estimates were reported in the announcement titled 'Definitive Feasibility Study Update' dated 5 June 2023. Cobalt Blue confirms it is not aware of any new information or data that materially affects the information included in that announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant announcement continue to apply and have not materially changed.*

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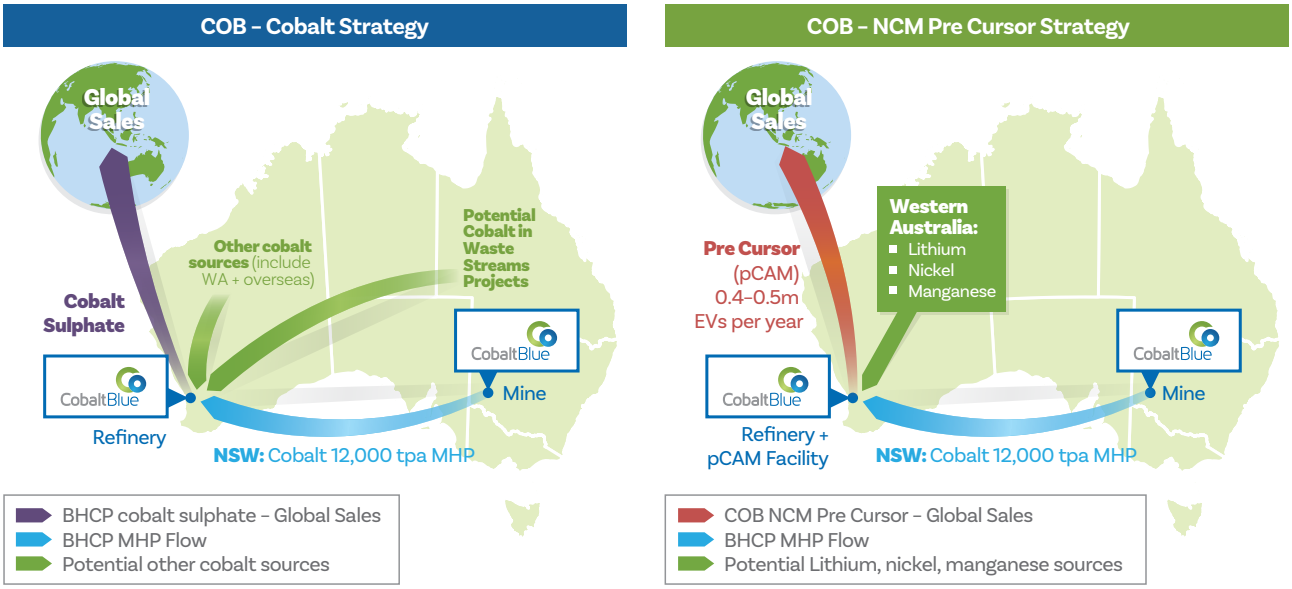
Permitting

COB has commenced discussions with the West Australian Government regulator on the permitting pathway for the refinery. A program of studies is being costed to cover emissions, waste, water, power, traffic, logistics, noise, and hazardous materials.

COB Mine to Battery Grade Market Model

COB is advancing a mine to battery grade market model. This is comprised of a mine in Broken Hill, New South Wales feeding into a refinery to be built in Kwinana, West Australia. The refinery can also process third-party materials and well as cobalt and other metals from waste stream projects (mining waste generating recycled metals). The refinery is then further scalable over time. The strategy is depicted in Figure 5:

Figure 5 – **Cobalt Blue Sulphate Refinery and NCM Precursor Strategies**



Source: Cobalt Blue Holdings Limited.

Refinery – Other Advantages

Allied Nation supply chain benefits

COB is aiming to deliver into the Allied Nation supply chain created by the US IRA and EU CRMA. More recently, the Albanese and Biden governments have proposed a Climate, Critical Minerals and Clean Energy Compact that will treat Australian projects in similar way to North American based projects in order to qualify for equity and debt funding by US Government agencies and companies (It should be noted that the compact is subject to US legislative endorsement). These legislative developments are ensuring Australia's critical minerals, and projects such as ours, will play a central role in the world's energy transformation.

Commercial relationships

Refinery development will allow COB to collaborate globally in the selection of cobalt/nickel feedstock and assess which cobalt miners will become suitable long term partners targeting premium markets.

Refinery qualification ahead of BHCP operations

Producing saleable cobalt sulphate by late 2025 will allow COB to qualify refinery production for the global battery supply chain in advance of BHCP first operations. For COB, successful validation of cobalt sulphate from the refinery will de-risk the BHCP investment whilst reducing working capital needs. Note that qualification period for new cobalt chemicals entering the electric vehicle production chain is nominally 6–12 months.

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Timetable

Figure 6 – **Estimated Development Schedule**

Broken Hill Cobalt Project	PRE-2021	2021	2022	2023	2024	2025
Business Achievements	100% Project Ownership CRC-P Grant	Global Cobalt Sample Program	Global Cobalt Sample Program Major Project Status CMAI Grant	Partner/Offtake discussions	Completion of financing EPC Renewable Power Contracts Commence construction	Construction
Technical Studies	Project Update 2020 PFS 2018	Definitive Feasibility Study	Definitive Feasibility Study	Definitive Feasibility Study	Detailed Engineering	
Process Testing	Pilot Scale Testwork	Pilot Plant – 30 Tier 1 Partners Offtake Contract Negotiations (begin)	Demonstration Plant – Bulk Sample & Concentrate	Demonstration Plant – Larger Scale (24/7) Operations Commercial Qualification Samples		
Environmental Approvals		EIS Field Studies	EIS Field Studies		EIS Submission SSD Determination Operating Permits	ESG/CO_2 Reporting

Kwinana Cobalt Refinery	PRE-2021	2021	2022	2023	2024	2025
Milestones				WA Refinery Announced Definitive Feasibility Study	Completion of financing Operating Permits Commence Construction	Complete Construction Commence Operations
	PRE-2023			MILESTONES		

Human Resources Update

HR, People and Culture Manager

Emma Jenkins joined COB during July 2023 as a HR Executive – People and Culture. Emma is a strategically focused HR professional with 15 years' experience in a variety of industries, including mining and manufacturing. She is skilled in a wide variety of generalist functions and has specialist expertise in the areas of employee and industrial relations, talent acquisition and organisational development. Beyond managing Human Resource functions in Cobalt Blue's corporate and operational locations, Emma will also be working on future HR requirements in Broken Hill and the cobalt refinery in Kwinana.

Cobalt Blue Background

Cobalt Blue (ASX: COB) is a mining and mineral processing company focussed on the development of the Broken Hill Cobalt Project in New South Wales, Australia. The portfolio of three granted tenements in a total area of 49 km^2 containing large-tonnage cobalt-bearing pyrite deposits are located 23 km west of Broken Hill. COB has developed a patented minerals processing technology for treating pyrite feedstocks targeting 85–95% recovery of cobalt from ore to product (as Mixed Hydroxide Precipitate or Cobalt Sulphate). The Broken Hill Cobalt Project has a targeted project life of +20 years and is expected to be a significant employer in Regional NSW, with around 400 full-time jobs generated. COB will become a global top 5 supplier of battery-grade cobalt (ex-China).

This announcement contains "forward-looking statements". All statements other than those of historical facts included in this announcement are forward-looking statements. Where the Company expresses or implies an expectation or belief as to future events or results, such expectation or belief is expressed in good faith and believed to have a reasonable basis. However, forward-looking statements are subject to risks, uncertainties and other factors, which could cause actual results to differ materially from future results expressed, projected or implied by such forward-looking statements. Such risks include but are not limited to cobalt metal price volatility, timely completion of project milestones, funding availability, government and other third-party approvals. Readers should not place undue reliance on forward-looking statements. The Company does not undertake any obligation to release publicly any revisions to any "forward-looking statement".

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.

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 June 2023: Definitive Feasibility Study Update
- 13 April 2023: CEO's Letter to Shareholders

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.

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