Market Update

02 Oct 2024

Cobalt Blue Holdings Limited

A Green Energy Exploration Company

ASX Code: **COB**

Commodity Exposure:

Cobalt & **Sulphur**

Directors & Management:

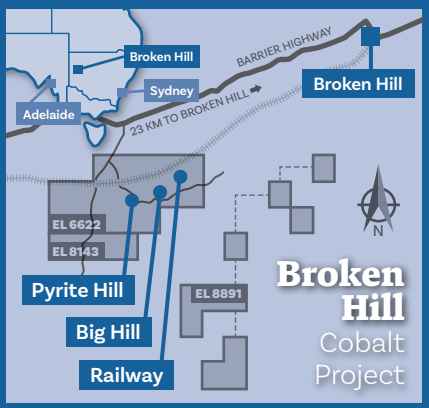
Robert Biancardi	Non-Exec Chairman
Hugh Keller	Non-Exec Director
Joe Kaderavek	CEO & Exec Director
Danny Morgan	CFO & Company Secretary

Capital Structure:

Ordinary Shares at 02/10/2024:	**422.5m**
Unlisted options/rights:	**47.7m**
Market Cap (undiluted):	**$33.8m**

Share Price:

Share Price at 02/10/2024:	**$0.08**



Cobalt Blue Holdings Limited

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Highlights

Kwinana Cobalt Refinery Update

KEY POINTS

- Cobalt Blue Holdings Limited (ASX: COB, Cobalt Blue) is pleased to provide updated project cost estimates and revenue analysis for the Kwinana Cobalt Refinery (**KCR**) to support financing processes and the transition to KCR construction. The update also includes cost estimates for future capacity expansion.
- KCR is a proposed cobalt-nickel facility representing Australia's first cobalt sulphate refinery that will produce high-quality, battery-grade cobalt sulphate intended for US Inflation Reduction Act (**IRA**) and European Union (**EU**) markets. Stage One capacity is set at 3,000 tonnes per annum (tpa) cobalt (as cobalt sulphate) and ~500 tpa nickel (as nickel metal), producing raw ingredients to supply the Precursor Cathode Active Material (**pCAM**) industry. Construction is expected to commence in 1H25, with completion expected within 12 months.
- This Update presents an evaluation of a defensive cobalt and nickel refining business that is expected to generate stable margins throughout the highs and lows of the cobalt price cycle. On a 100% owned basis, the Refinery has the following financial metrics:
  - Estimated capital cost: A$60m (including 15.5% contingency)
  - Stage One NPV_8 (post tax): A$68m, IRR (post tax): 23%
- Value Engineering Study – Stage Two Expansion (additional +3,000 tpa cobalt as cobalt sulphate): The estimated additional capital expenditure for Stage Two is A$23m, representing a lower capital requirement for doubling cobalt capacity compared to the initial build cost. Incremental Stage Two financial metrics are shown below:
  - Estimated capital cost: A$23m
  - Stage Two (incremental) NPV8 (post tax): A$90m, IRR (post tax): 64%
  - Combined (Stage One + Stage Two) Refinery: NPV8 (post tax): A$158m, EBITDA: A$46m pa

Joe Kaderavek, CEO of Cobalt Blue, said, *"We are pleased to be able to update investors with pre financing capital estimates. This latest study further demonstrates the Kwinana Refinery is a compelling, low-cost investment that rapidly injects Cobalt Blue into the mid-stream segment of the Strategically Aligned Nations' critical minerals supply chain. The longer-term returns from expansion stages are particularly attractive."*

Kan Ueda, Managing Director, Iwatani Australia Pty Ltd (Iwatani Corporation's wholly owned subsidiary) commented "*Iwatani Australia is pleased to note the considerable commercial, financial and technical progress made over the last six months to develop Australia's first cobalt sulphate refinery. We look forward to a long-term relationship with COB, delivering and operating the Kwinana Cobalt Refinery".*

Cobalt Blue proposes to build and operate a cobalt-nickel refinery in the Kwinana Industrial Area located 30 kilometres from the Perth metropolitan area in Western Australia (**WA**). The plant site is in East Rockingham near the Kwinana Bulk Terminal. Cobalt Blue had previously named Iwatani Corporation as our partner in developing the Kwinana Cobalt Refinery (**KCR**) (subject to final agreement). Iwatani Australia (**IWA**) owns and operates the Doral Fused Materials (DFM) plant in the Kwinana industrial district, which is currently permitted for industrial use and has sufficient space to support the operation of a refinery.

The strategic rationale for Cobalt Blue and IWA to pursue the development of a cobalt refinery in Australia includes:

- Growing demand for Electric Vehicles (**EVs**) coupled with the increasing requirement for responsibly sourced critical minerals;
- Strategic and economic advantages and permitting requirements for locating the refinery location in the Kwinana Industrial Area;
- Favourable long-term outlook for international cobalt market supply and demand dynamics; and
- Aligning with a major Japanese trading house, Iwatani Corporation.

COB completed a Refinery Project Update in November 2023 that provided a preliminary evaluation of the construction, operation, and financial outcomes of KCR. Throughout 2024, COB has been advancing workstreams covering:

- detailed engineering design with Tetra Tech Coffey Pty Ltd, our engineering partner;
- flowsheet development and optimisation at the Broken Hill Technology Development Centre;
- negotiations for KCR feedstock and sales contracts;
- supporting studies for the operating permits and development consent applications; and
- KCR Joint Venture agreements negotiations with IWA.

This Update discusses the results of the latest engineering design project cost estimates and subsequent revenue analysis.

Kwinana Cobalt Refinery Overview

KCR is a proposed cobalt-nickel facility representing Australia's first cobalt sulphate refinery that will produce high-quality, battery-grade cobalt sulphate intended for US Inflation Reduction Act (**IRA**) and European Union (**EU**) markets.

Base Case – Stage One

The base case scenario is described as follows:

- Plant capacity set in Stage One at 3,000 tonnes per annum (tpa) cobalt (as cobalt sulphate) and ~500 tpa nickel (as nickel metal), producing raw ingredients to supply the Precursor Cathode Active Material (**pCAM**) industry.
- Estimated capital cost: A$60m inclusive of 15.5% (excluding contingencies A$53m compared to A$48m estimate released November 2023). Expansion options start at A$23m including EPCM.
- A Commissioning/Product Qualification period of up to twelve months at half throughput capacity and 75% of sales value. The extended commissioning time enables customers to validate the product and any plant modifications required to meet their specifications.
- Pricing: Cobalt revenue assumes sulphate sales at a 10% discount to standard-grade cobalt metal. The benchmark Fastmarkets sulphate and metal price indices do not include regional or quality differential premiums. Note the analysis does not include any premiums associated with the US Inflation Reduction Act (**IRA**) or the EU Critical Raw Minerals Act (**CRMA**).

The capital estimates are considered at a Class 3 level, with an expected accuracy of ±15 %. These statements will support financing processes and the subsequent start of KCR construction in 2025. The financial metrics for the Stage One (base case) scenario are given in Table 1.

The project is estimated to generate (on a 100% owned basis):

- NPV_8 (post tax): A$68m, IRR (post tax): 23%
- Average Annual EBITDA: A$24m
- Project payback: 5.2 years

Table 1 – **KCR Stage One EBITDA, NPV and IRR**

Financials (100% owned)[1]		
Total Cobalt Revenue	A$ M	4,454
Total Nickel Revenue	A$ M	168
Total EBITDA	A$ M	465
Total Operating Cash Flow	A$ M	367
Valuation (100% owned)		
Net Present Value (8% discount rate, post tax)	A$ M	68
Internal Rate of Return (post tax)	%	23
Total Capital Payback Period	Years	5.2
Assumptions (100% owned)		
Cobalt Price	US$/lb	Up to US$28.00/lb by 2031
Nickel Price	US$/lb	7.50
Exchange Rate	AUD:USD	Up to 0.71 by 2029

1 Cobalt Blue does not plan to hold 100% of the KCR project.

Changes from earlier financial estimates are largely driven by conservative revenue assumptions representing a baseline for financing going forward.

Table 2 – **Sensitivities of Annualised average EBITDA ($M) versus cobalt price and exchange rate**

	Cobalt Price					
AUD:USD		Spot		LT		
	11	**15**	**20**	**24**	**27.5**	**40**
0.60	24	25	26	27	28	32
0.65	21	21	22	23	24	28
0.70	18	18	19	20	21	25
0.75	16	16	17	18	18	22
0.80	13	14	15	15	16	19

Value Engineering Study – Stage Two

The description below describes a KCR expansion option (Stage Two).

Stage Two provides growth potential to expand the plant to treat Australian and International supplies of cobalt-nickel hydroxide or sulphides, or other intermediates (including black mass recycling). This would increase total throughput to potentially 6,000 tpa cobalt.

The additional capital expenditure for Stage Two is estimated at A$23m, representing a significant reduction in capital to increase capacity, compared to the initial build costs. Stage One has designed concrete and steel works to simplify the incorporation of later stages (capacity). For example, the current concrete and shed works will accommodate the installation of Stage Two equipment.

COB anticipates FID on Stage Two could follow at the end of the first full year of production (expected to be the end of 2027). Stage Two Expansion is expected to take 12 months to construct during 2028 and be operational from 2029.

The net result delivers significantly stronger total project returns, due to more efficient deployment of capital versus cobalt production capacity. The Stage Two financial metrics are shown on the following page:

Table 3 – **Combined Stages EBITDA, NPV and IRR**

Stage	Capital Expenditure ($m)	Cobalt Processing Capacity (metal tpa)	Post Tax NPV ($m)	IRR (Post Tax %)	Typical annual EBITDA (A$m)
One	60	3,000	68	23	24
Two	23	+3,000	90*	64*	22*
Combined Stage One + Stage Two	83	6,000	137**	29**	43**

* *based on start date of expansion case EPCM*

** *based on combined project from 2025 commencement date*

Kwinana Cobalt Refinery Strategic Rationale

Key industrialised and developed countries have identified cobalt as a critical mineral, reflecting its industrial importance as a key raw material used in the global electrification transition. There is also concern about the high level of concentration in extraction and processing and associated risks to supply chains. An 'Allied Supply Chain' is emerging to include the USA, Japan, South Korea, Canada, European Union and Australia to develop policies and strategies to ensure greater supply chain security.

With cobalt demand forecast to double before the end of the decade[1], global policy makers are rapidly advancing legislation and incentives to ensure security of supply amid a diversified supply chain. These initiatives are providing an increasingly supportive environment to increase the supply of critical minerals, through both tangible and intangible assistance. Consequently, COB believes critical minerals' markets are set to bifurcate between products that qualify for legislated incentives (eg the USA's IRA electric vehicle tax credits) versus products that are produced by a foreign entity of concern. Given Australia's relationship with strategically aligned nations and our responsibly-sourced production process, our products should receive a premium on top of the prevailing pricing mechanism. Please note that these premiums are not modelled in this announcement.

The value of a refinery located in Australia includes:

Australia's First Cobalt Sulphate Refinery

KCR will represent Australia's first cobalt sulphate refinery, producing high-quality, battery-grade cobalt sulphate. By producing high-value cobalt sulphate, KCR will support the development of pCAM production capability and capacity in Australia.

Excellent Location and Infrastructure

KCR will be located at an existing mineral processing facility in Kwinana in Western Australia with extensive infrastructure and services, access to nearby port and export facilities, transport logistics and skilled labour.

Proven Technology

The flowsheet has been successfully tested at Cobalt Blue's Pilot and Demonstration Plants in Broken Hill. Since 2021, Cobalt Blue has invested over $15m in demonstrating all stages of the flowsheet. The company has run a sample program offering MHP and cobalt sulphates with numerous commercial partners and targets from across the world.

Early to Market Production Start

Following expected product commercial validation in 2026, KCR is targeting commercial production from 2027, representing a quick-to-market critical mineral downstream processing development.

Strong ESG Credentials

KCR will provide access to responsibly derived cobalt from a traceable, sustainable supply source. The company will utilise the industry-standard Responsible Minerals Initiative's ASM Cobalt Framework to provide customers with operational and supply chain transparency. The company will also seek the Global Battery Alliance's Battery Passport certification that conveys information about all applicable sustainability and lifecycle requirements of the company's products.

Supports Australian Battery Material and Manufacturing Initiatives

KCR is aligned with the Australian Government's strategic critical mineral focus to develop the country's battery material production capability from mines to end products. KCR will be capable of delivering battery-grade chemicals into the Australian production chain.

1 *Benchmark Minerals Intelligence*

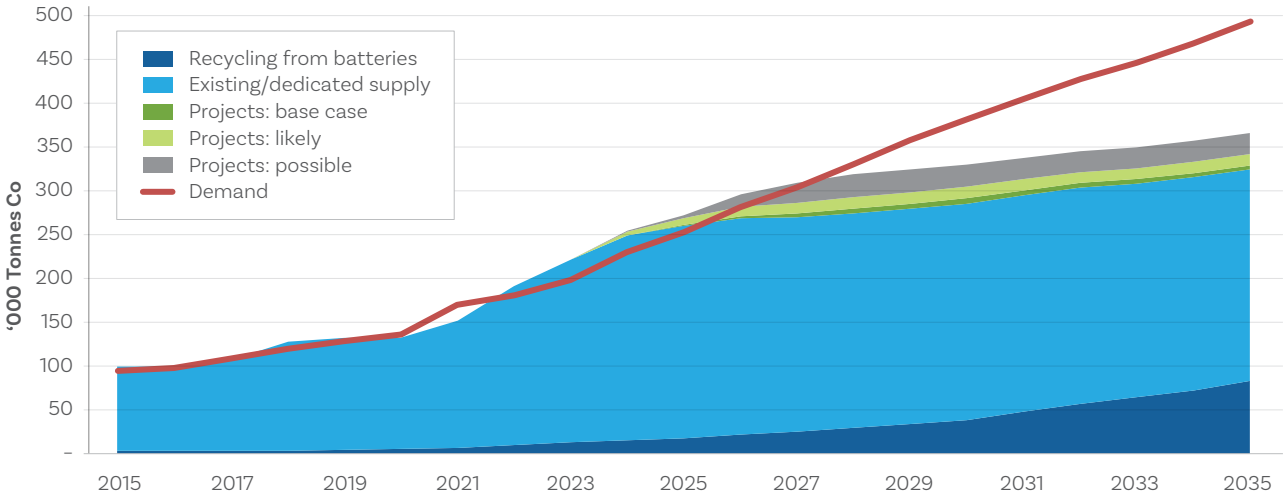
Global Strategic Value

Policymakers in strategically aligned governments (namely the US and EU) have introduced legislation with a primary goal of securing responsibly sourced critical minerals supply that reduces reliance on China. KCR will directly contribute to building this emerging supply chain.

Market Analysis

The cobalt market is in a state of transition—global supply growth has outweighed demand growth since 2022. However, this trend will reverse in 2025, and demand growth is forecast to outpace supply growth for the next decade, according to Benchmark Minerals Intelligence. Prices are expected to recover from the current cyclical low and return toward the long-term average of US$27/lb ($2024).

Figure 1 – **Global cobalt supply vs demand**



Source: Cobalt Blue Holdings, Benchmark Minerals Intelligence

When considered through the lens of available capacity for IRA-compliant, battery-grade cobalt, an immediate shortfall grows as IRA restrictions tighten. Cobalt Blue believes battery industry participants will be increasingly willing to pay a premium for responsibility-sourced, IRA-compliant material. Cobalt Blue's refinery strategy is designed to address this growing demand.

Iwatani Corporation

COB is engaged with IWA as a partner for the KCR. IWA is a subsidiary of Iwatani Corporation, which:

- is a leading Japanese multinational specialising in the production and trading of commodities;
- has a global presence with subsidiaries and affiliates in 15 countries, with established partnerships and collaborations with companies worldwide, to further advance its expertise in technologies and explore new markets;
- has a large trading arm seeking to supply its Japanese partners in major global Electric Vehicle markets, including the United States; and
- owns and operates the DFM plant in the Kwinana industrial district. The site has sufficient space to support the operation of the KCR.

COB believes that partnering with an existing property owner would substantially reduce KCR development time. IWA is currently considering an investment structure in KCR via a funding contribution.

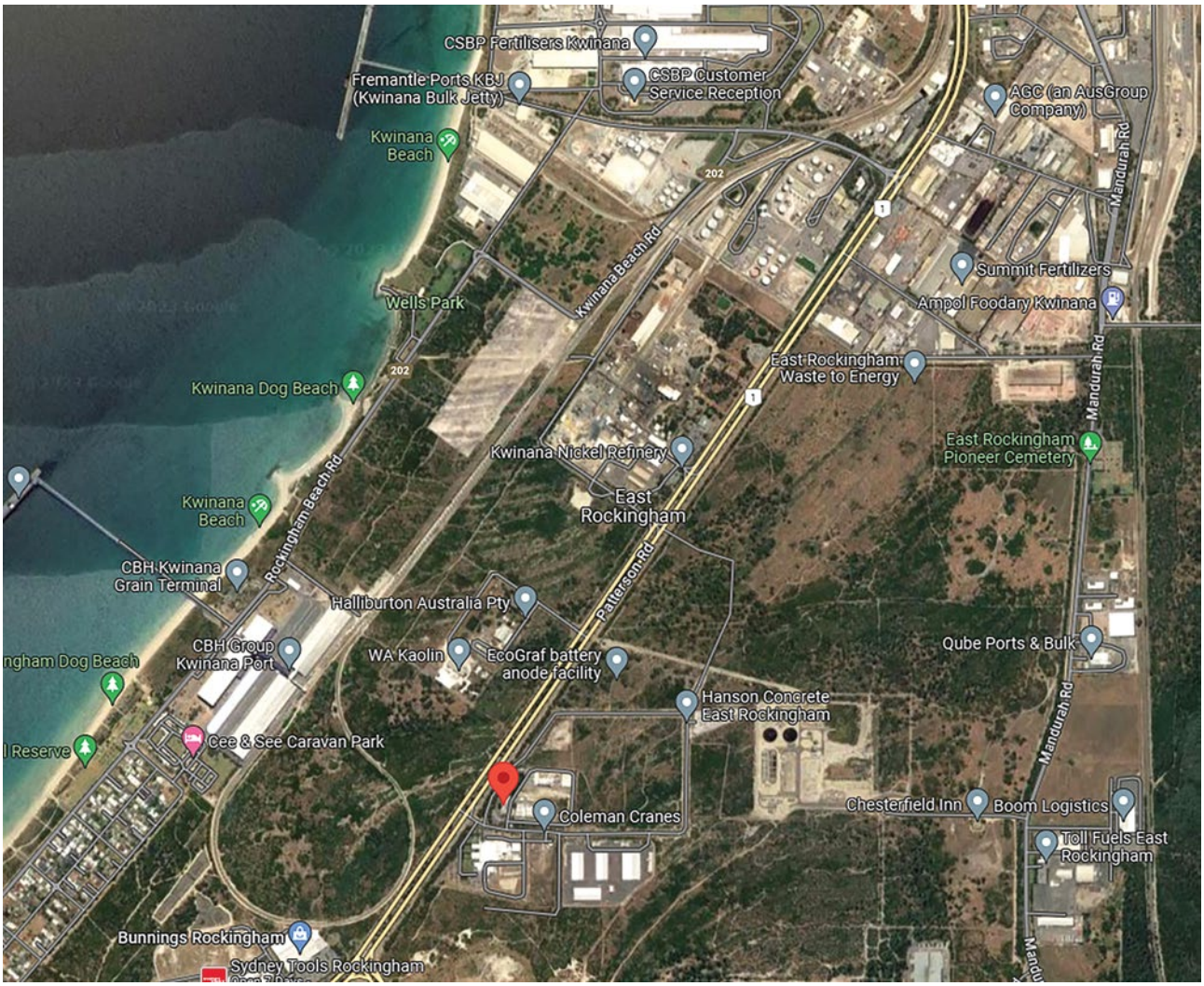
Location

The proposed site for the KCR is at DFM's existing mineral processing facility located in East Rockingham, WA, near the Kwinana Bulk Terminal. DFM, a wholly-owned subsidiary of IWA produces fused zirconia industrial minerals at the site.

This location will lead to lower site and construction costs, lower equipment delivery costs and reduced development period compared to constructing a refinery elsewhere. The Kwinana industrial district is a major chemical district, which provides ready access to chemicals with lower associated costs and lower logistical costs, providing a significant advantage given that typically >50% of the direct costs associated with the production of high purity cobalt sulphate come from reagents and chemical costs.

Kwinana has ready access to Fremantle Ports and import / export facilities that provide a meaningful advantage for importing third-party feedstock and exporting finished products, compared to a more remote location. Domestic and international cobalt intermediate materials (e.g. mixed hydroxide precipitates (MHP), mixed sulphide precipitates (MSP) can be transported to KCR via containers from Fremantle Port or nearby rail intermodal.

Figure 2 – **Doral Fused Materials location**



Refinery Facilities

KCR's process plant will comprise processing plant circuits for feed handling, leaching and residue filtration, trace metal recovery by precipitation and/or ion-exchange, cobalt-nickel separation by solvent extraction, product recovery by crystallisation and/or electrowinning, and product handling. Available land at the DFM site will be utilised for KCR.

KCR's layout contains one main shed, divided into three 'rooms' which contain different areas of the process for ease of operation, safety, and management:

- Area 1 will contain the feed handling, leaching, filtration, trace metal recovery, electrowinning.
- Area 2 will contain the cobalt and nickel solvent extraction.
- Area 3 will contain the crystallisation, drying and bagging of the cobalt sulphate.

Ancillary equipment that will be required includes:

- Lay down yard and storage of containers for feed and products.
- VPSA oxygen plant.
- Sulphuric acid storage.
- Lime silo/hopper storage.
- Weighbridge.

Reagents (e.g. limestone, sulphuric acid) will be variously delivered by bulka bags, tanker, isotainers, and/or intermediate bulk containers.

DFM's site has existing utility connections for power, water, stormwater, and sewerage which will also be available for KCR. These include three phase 415 V power along with a 132 KV switchyard. For Stage One, an estimated 4-5 MW of power will be required. Further upgrades will be required for Stage Two.

Feedstock Testwork and Evaluation

Refinery feedstock (cobalt intermediate products) is typically traded as a hydroxide precipitate containing 35–45% cobalt. Sulphide precipitates are also available, typically containing 25–35% cobalt and 15–25% nickel. A further type of feedstock can be sourced from recycling facilities associated with the battery supply chain, for example black mass from battery recycling, or wastage from battery production.

In Stage One, the feed for KCR will be purchased from third parties.

Supply must adhere to strict criteria, and COB will only source from suppliers that:

- do not contravene USA Foreign Entities of Concern (**FEOC**) definitions;
- meet appropriate environmental, labour and sustainable production standards; and
- permit traceability/authentication to validate origin and supply chain custody.

To date, large-scale samples from three different operations have been obtained for refinery testwork at the COB Broken Hill Technology Development Centre. Throughout the year, the plant has operated in targeted campaigns, including on a continuous basis, with the ability to trial parameters and equipment settings. To date, approximately 150kg of cobalt sulphate has been produced as well as a further 415kg of cobalt in circuit inventory (equivalent to 2,000 kg of cobalt sulphate).

Cobalt Blue is working to negotiate acceptable terms with potential financiers and is well advanced to execute initial feedstock contracts.

Figure 3 – **Cobalt sulphate produced at the Broken Hill Technology Development Centre Plant**

Demonstrated Metallurgical Processing

Cobalt Blue's process flowsheet has been developed at our Broken Hill Technology Development Centre. Significant test work has been completed since 2017. A dedicated pilot facility was constructed in 2020 and upgraded in 2022 to a demonstration facility. The scale of the demonstration plant is approximately 30–100 times smaller than the commercial plant, depending on individual circuits.

Table 4 – **Demonstration to Commercial Plant scale ratio**

	Demonstration Plant	Commercial Plant	Scale Ratio
Feed Solids	300 kg/day cobalt	9000 kg/day	1:30
Solvent extraction	150 L/hr PLS flow	12,000 L/hr PLS flow	1:80
Crystalliser	50 L/hr feed flow	5000 L/hr feed flow	1:100

The plant is operated in discrete sections, with the ability to trial parameters and equipment settings. Process plant liquor is circulated from leach to trace metals, to solvent extraction, and back to leach. Each unit is operated for between 10 and 100 hours of continuous run time, with process liquor stored in tanks between circuits.

Offtake

Cobalt Blue has progressed offtake/project partner discussions with approximately 30 international companies. Discussions with potential partners are on-going. Samples were received by over 20 partners globally spanning Europe, South Korea, and United States. Along with Japan, these represent the strategically aligned EV markets. The US Inflation Reduction Act (**IRA**) and the European Union's (**EU's**) Critical Raw Materials Act (**CRMA**) are providing a positive environment to support these discussions.

Permitting

KCR is expected to be operated by a COB-IWA joint venture arrangement that will utilise the existing DFM facilities and their Western Australian permits and licenses. The site is currently licensed by the WA Department of Water and Environmental Regulation for a number of activities including metal smelting or refining. The license contains standard environmental monitoring, discharge limit and reporting requirements.

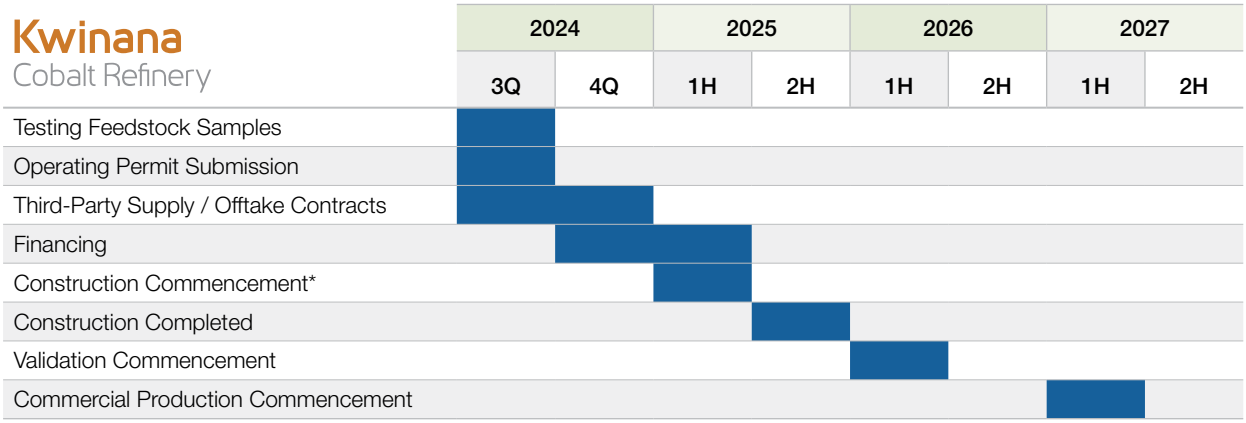
WA-based consultants (ABEC and GreenValues Australia) have been appointed to prepare permit applications for the refinery:

- A modification to the existing Works Approval will be sought from the Department of Water and Environmental Regulation (**DWER**). The necessary background studies include assessments of air emissions, vegetation impacts, waste management, use/storage/management of hazardous substances, stakeholder consultation, and a facility commissioning plan. Cobalt Blue is intending to submit the application in late 2024 to DWER.
- A Development Consent for the new refinery building will be required. An application will be submitted to Rockingham City Council, covering detailed buildings and site plans, along with planning studies on traffic, bushfire, waste and stormwater, and car parking. The Development Consent will be assessed simultaneously with the Works Approval.

Indicative Project Timeline

Cobalt Blue is targeting the start of operations for Stage One of KCR in 2026. Commissioning and ramp-up are expected to take twelve months, with the annualised throughput in 2026 being 50% of capacity. This will coincide with product validation by offtakers. Following successful validation of cobalt sulphate, the plant will commence full-scale operations in 2027, with nameplate production of 3,000 tpa cobalt sulphate and ~500 tpa nickel metal.

Cobalt Blue is working to the following indicative timeline:



** Subject to financing and permit approvals*

Capital Cost Estimate

Updated capital cost estimates have been prepared based on:

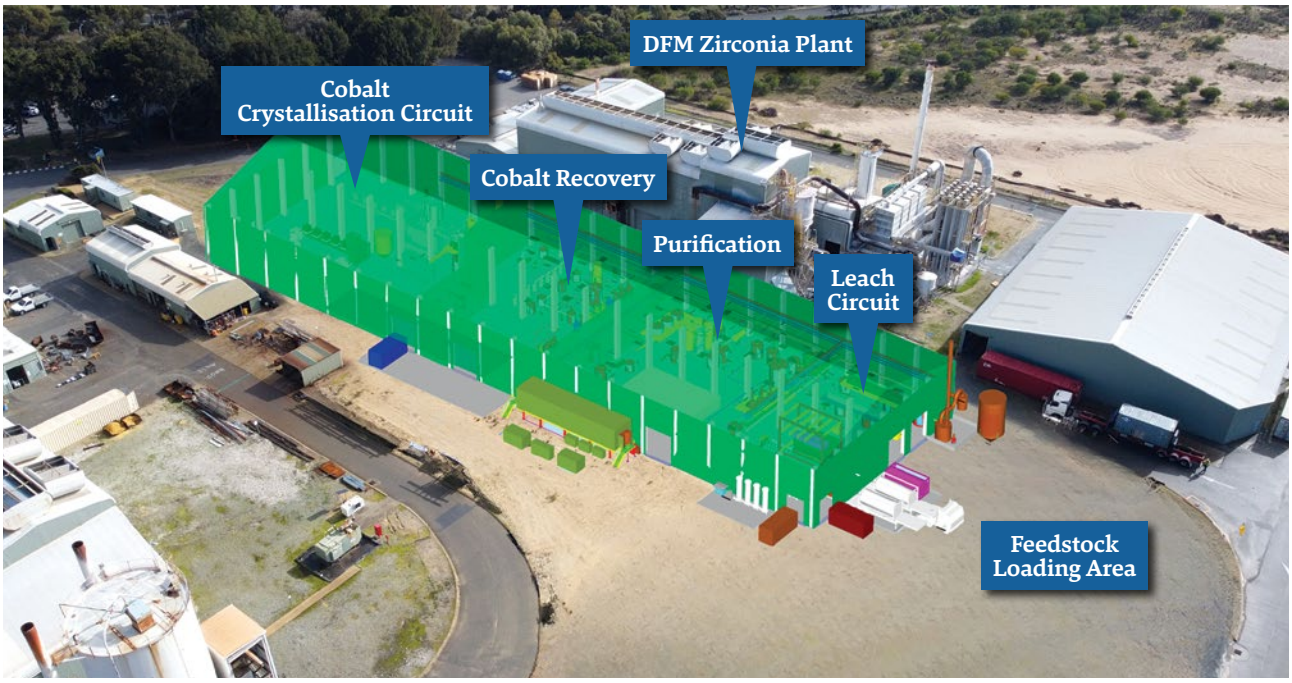
- Equipment quotes covering all major items of equipment – tanks, pumps, agitators, bins, solvent extraction vessels, crystalliser, product drying and bagging
- Installation estimates – concrete + steel + piping from 3D model
- Electricals and instrumentation from quotes and estimates from vendors/partners
- Process plant shed quote from construction/fabricator
- Site works for total footprint inclusive of container receivals/storage – estimated by Tetra Tech
- EPCM estimate by Tetra Tech

The estimates are ±15%. Further detailed engineering will continue with a target of being 'construction-ready' by end 2024. The capital and operating costs will then be finalised for 'construction budget purposes' (±5–10%).

Table 5 – **Detailed Capital Cost estimate**

Item	$A	
Process Plant Direct Equipment	14.6m	incl 10% contingency
Installation	21.6m	incl 17% contingency
Site Infrastructure	10.3m	incl 15% contingency
Engineering	9.7m	
First Fill Requirements	0.76m	incl 10% contingency
Sub-TOTAL	**56.9m**	
Growth	2.8m	5% contingency for growth
TOTAL	**59.8m**	**Incl 15.5% contingency**

Figure 4 – **Proposed plant site layout**



Sources of Funding

Possible sources of investment include:

- IWA contribution;
- COB contribution;
- Institutional investors, equity funds, family offices, and strategic investors;
- Domestic export credit agencies and other Federal or State agencies; and
- Foreign government export and import credit agencies & other agencies e.g. Japanese government funding agencies.

Forward-Looking Information and Disclaimer

This announcement contains certain forward-looking statements. Forward-looking statements can generally be identified by the use of forward-looking words such as 'anticipate', 'believe', 'expect', 'project', 'forecast', 'estimate', 'likely', 'intend', 'should', 'will', 'could', 'may', 'target', 'plan' and other similar expressions within the meaning of securities laws of applicable jurisdictions. Indications of, and guidance or outlook on future earnings, distributions or financial position or performance are also forward-looking statements. These forward-looking statements have been made based upon the Company's expectations and beliefs concerning future developments and their potential effect upon the Company (and its controlled entities) and are subject to known and unknown risks and uncertainties which are, in many instances, beyond the Company's control, and may involve significant elements of subjective judgement and assumptions as to future events which may or may not be correct. No assurance is given that future developments will be in accordance with the Company's expectations. Actual results could differ materially from those expected by the Company and the Company assumes no obligation to update any forward-looking statements or information.

About Cobalt Blue

Cobalt Blue is a mining and mineral processing company focused on the development of the Kwinana Cobalt Refinery in Western Australia. The company is also developing the Broken Hill Cobalt Project in New South Wales, and ReMine Plus projects with a view to global opportunities contained in mine waste. A leading developer of technology addressing the growing demand for critical minerals essential for the global energy transition, Cobalt Blue operates with a strong commitment to innovation and sustainability. The Company's optimised metallurgical processes are at the forefront of the industry.

Further information about Cobalt Blue can be found at www.cobaltblueholdings.com.

This announcement was authorised for release to the ASX by the board of Cobalt Blue Holdings Limited.

For further information, please contact:

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Investor Relations Manager
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info@cobaltblueholdings.com

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.

- 08 July 2024: Tetra Tech appointed as Refinery Engineer
- 25 June: CMAI Grant Instalment Received and Refinery Update
- 02 April 2024: Cobalt-Nickel Refinery Progress
- 26 February 2024: Broken Hill Cobalt Project and Cobalt-Nickel Refinery Update
- 19 January 2024: Cobalt-Nickel Refinery Project Update
- 27 November 2023: COB to Progress Cobalt Nickel Refinery Project in 2024

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.