

3Q 2023

# Company Presentation

ASX: COB



“Mine to battery markets”

## Kwinana

Cobalt Refinery

### Battery Grade Cobalt Sulphate:

- Stage 1 (2025): 3.0 ktpa
- Stage 2 (2026): 4.5 ktpa
- Stage 3 (2027+): 7.5 ktpa

## Broken Hill

Cobalt Project

### Primary Cobalt Resource:

- Mineral Resource of 118Mt\* for 81kt cobalt, targeted project life +20 years
- 3.5 ktpa cobalt (as MHP)
- 300 ktpa Elemental Sulphur

## CWSP

Cobalt in Waste Streams Projects

### Generate re-mining opportunities of battery metals from mine waste:

- Sustainable mining
- Environmental rejuvenation via removing sulphides
- Flin Flon testwork and other potential projects

\* See Compliance Statement at end of presentation



# Broken Hill Cobalt Project

## Targeted project life +20 years:

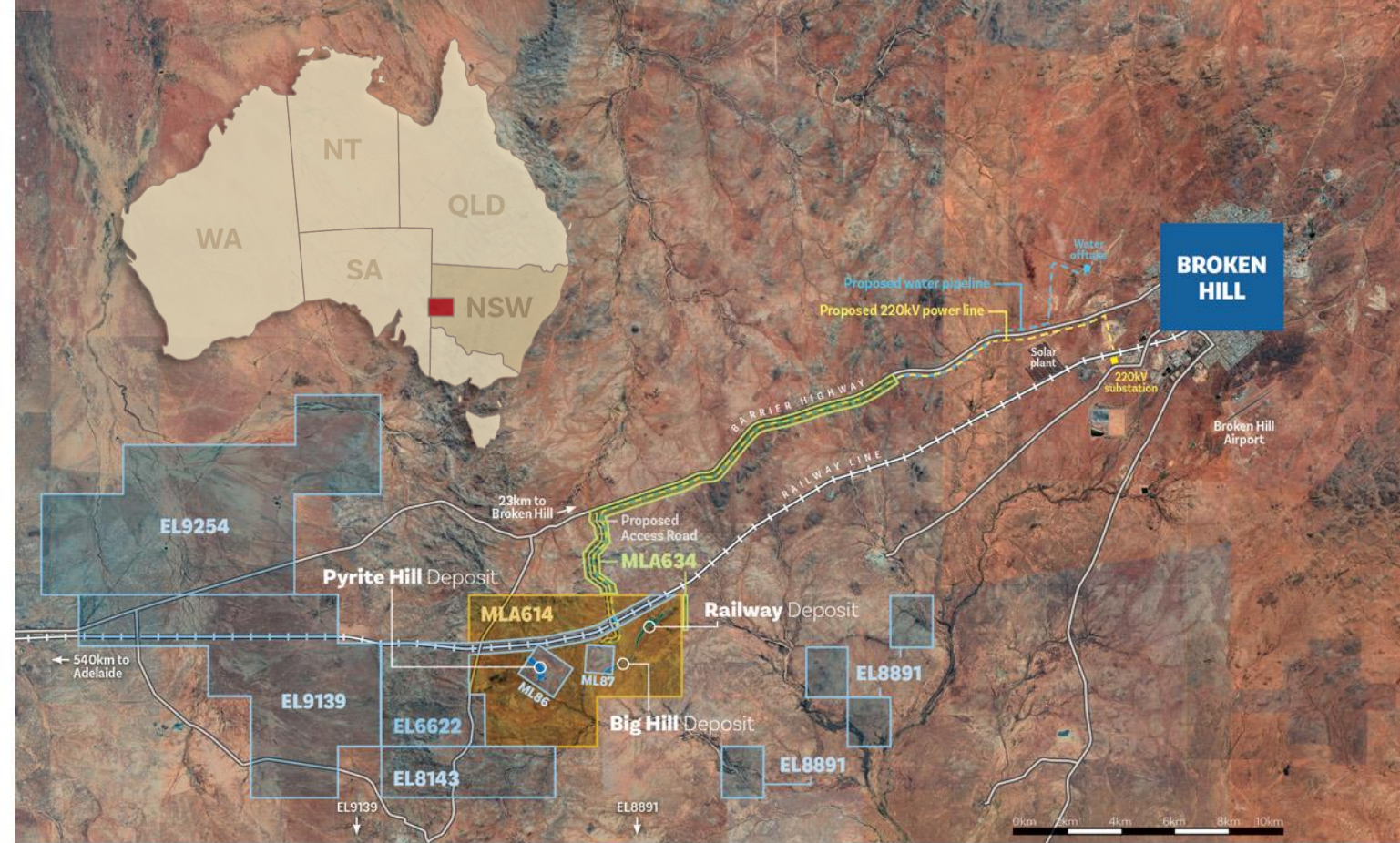
- Mineral Resource of 118Mt\* for 81,400t cobalt.

## Primary cobalt:

- 3,500 tpa of cobalt (as MHP).
- 300,000 tpa of Elemental Sulphur.

## A multi-pit open cut mine:

- Extracting 5.3–6.3 Mtpa cobaltiferous pyrite ore
- Onsite processing plant to treat ore by:
  - Concentration
  - Thermal decomposition
  - Pressure-oxidation leaching
  - Precipitation of cobalt-nickel hydroxide (~30% Co, ~7% Ni) for transport to KCR for refining.



## Ancillary infrastructure:

- Power, water, rail and road connections to existing networks (onsite renewable power generation also being considered).

## Integrated Waste Landforms:

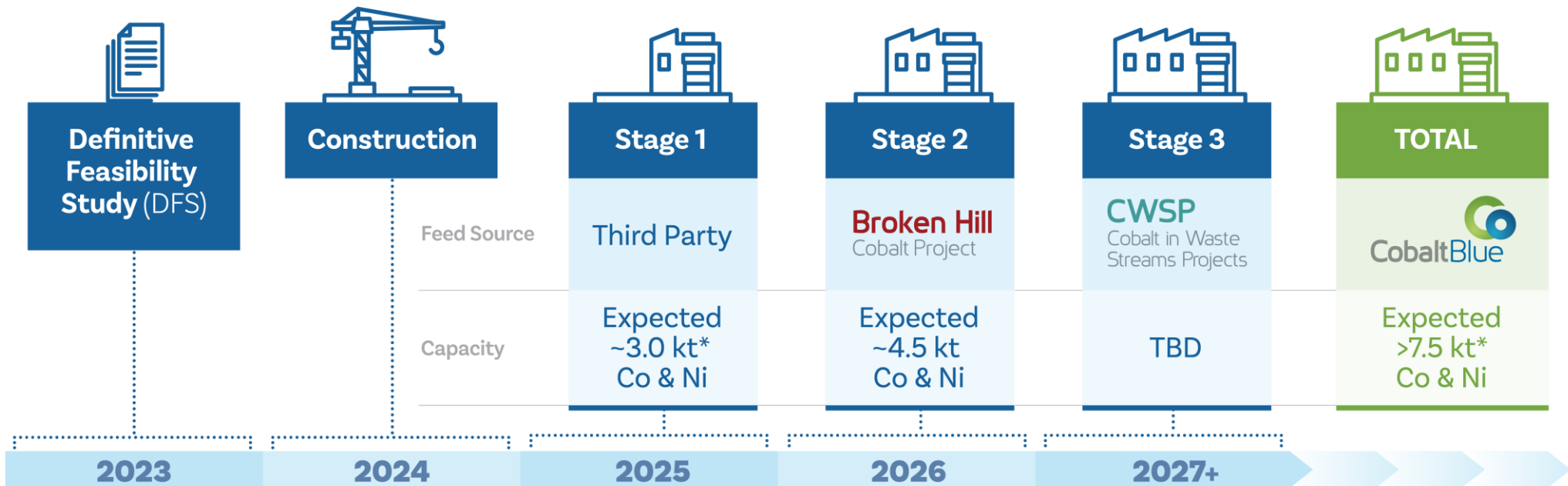
- For sustainable, post-closure storage of mine and plant waste.



# Kwinana Cobalt Refinery

**Kwinana**  
Cobalt Refinery

**Aim: US/EU compliant, responsibly sourced battery chemicals**



Timetable and goals are indicative. Capacity refers to metal content basis.

\* 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.





# Cobalt in Waste Streams Projects

## Project Aim: 'Trash to Treasure'

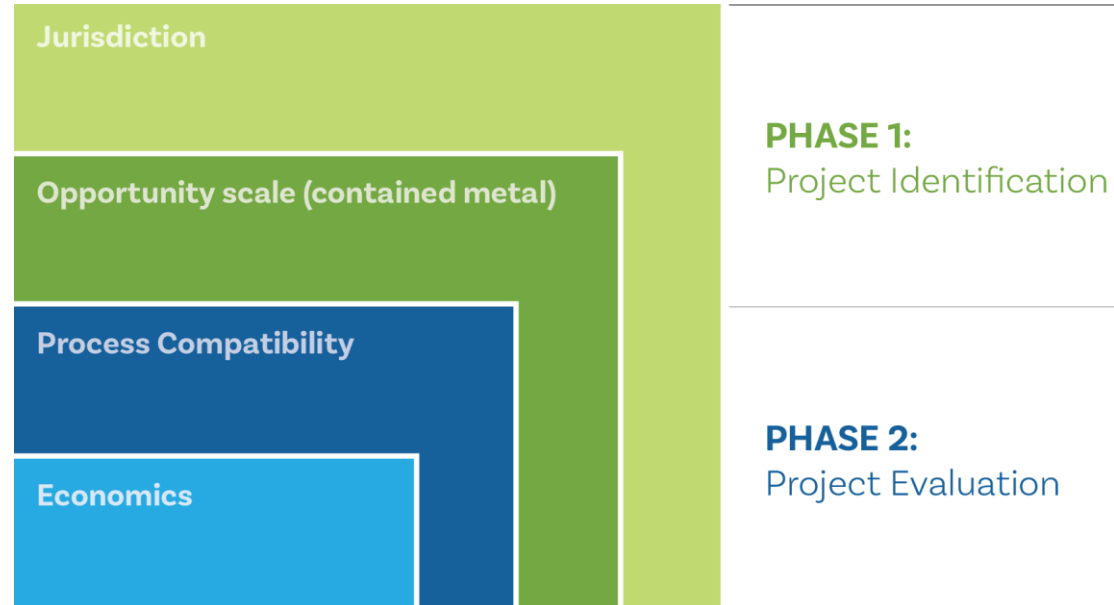
- Generate re-mining opportunities of battery metals from mine waste

## Phase 1: Project Identification

- Develop priority list of projects

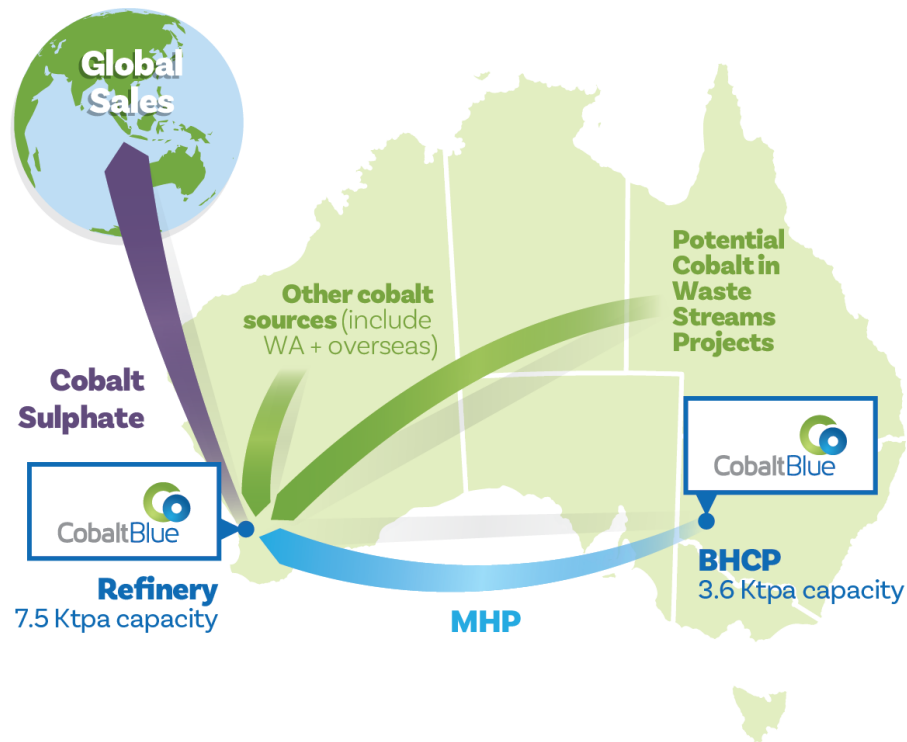
## Phase 2: Project Evaluation

- Undertake technical evaluation
  - Analysis and testwork
- Identify barriers to commercialisation

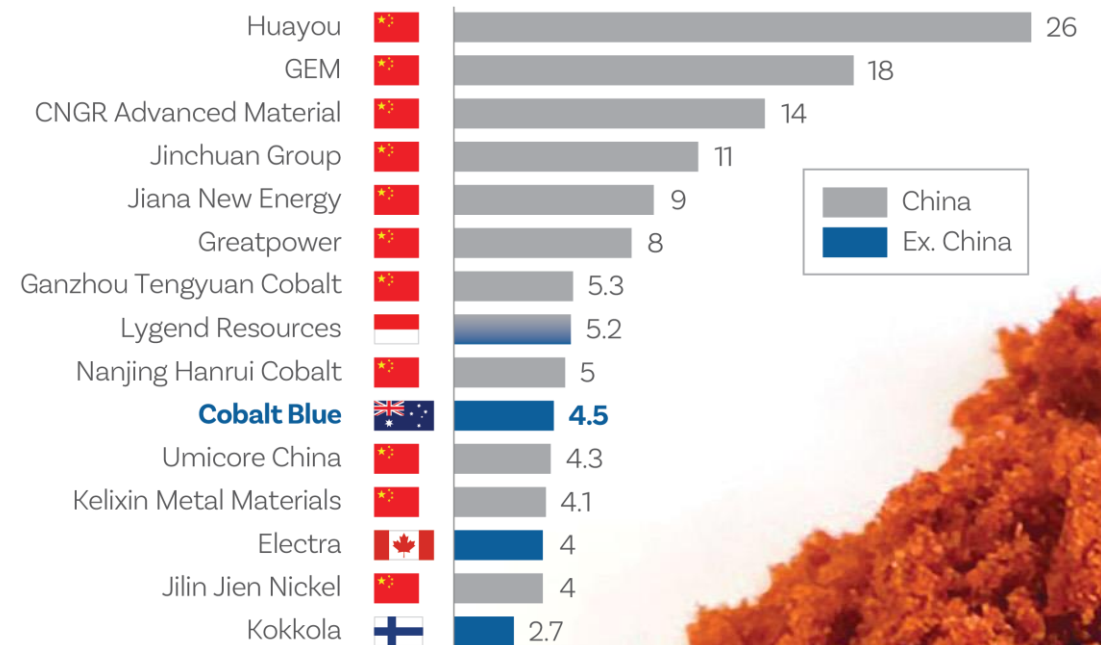


# Mine to Battery Materials Projects

**COB will become one of the largest producers of battery-grade cobalt in the world**



**Global cobalt sulphate capacity, 2026 (Kt Co)**



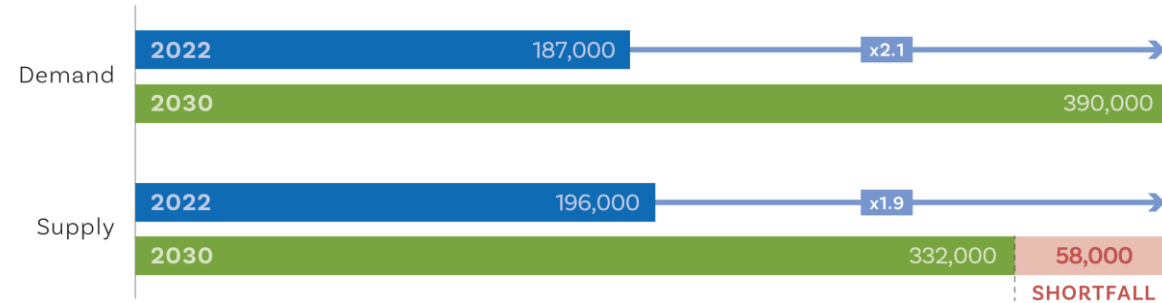
# Cobalt prices: imbalance shifts from 2024

- Cobalt supply growth has outpaced demand since 2022.
- This imbalance is expected to shift from 2024.

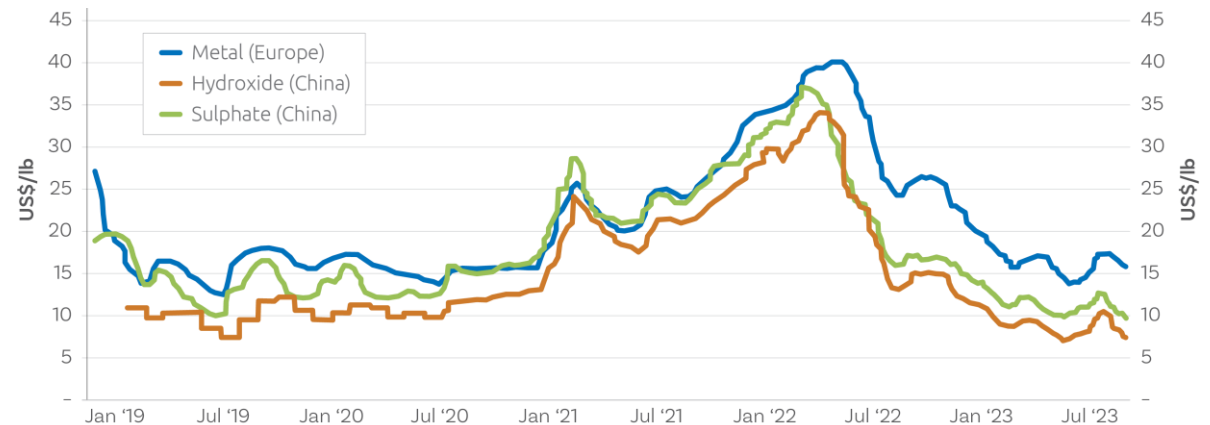
## CAGR 2022–2030:

- Supply – 6%
- Demand – 9%

## Cobalt demand vs supply (tonnes per annum)



## Cobalt Price (2019–2023)



ASX: COB

Source: Benchmark Minerals, Fastmarkets, Cobalt Blue Holdings Limited





# COB: Capital Structure 3 October 2023

## Capital Structure:

■ Ordinary Shares:	<b>375m</b>
■ Promissory Note <sup>1</sup> (5yr to 2025):	<b>\$3.0m</b>
■ Market Cap (undiluted):	<b>\$98m</b>

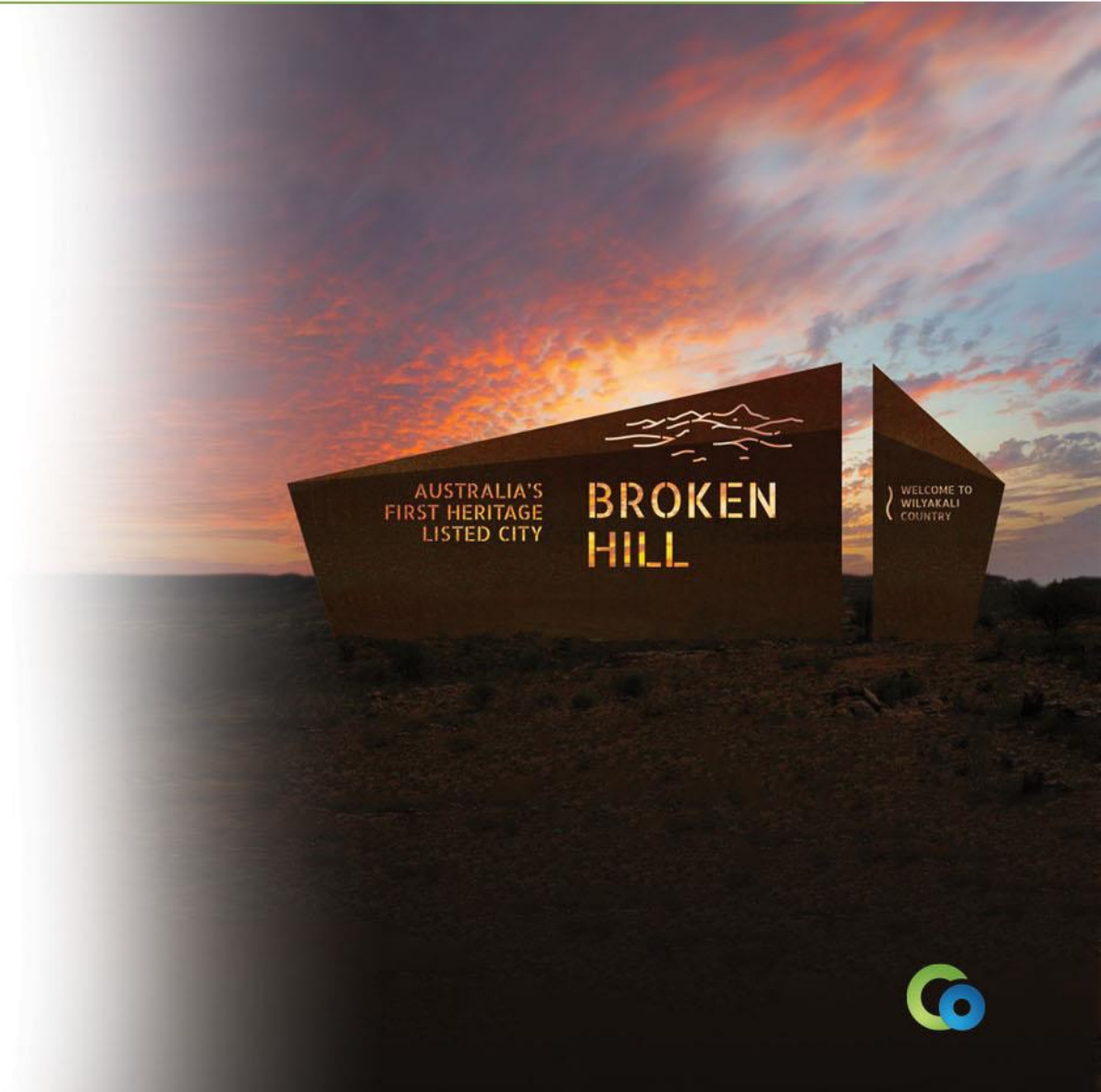
## Share Price:

■ Share Price:	<b>\$0.26</b>
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## Cash & equivalents on hand

■ As at 6/30/2023:	<b>\$15m</b>
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1. *Three years interest free, then 6% pa interest, paid annually in arrears.  
Can be repaid anytime in whole or in part without penalty.*





# Mine to Battery Materials Projects Timeline

## Expected Development Schedule

### Broken Hill Cobalt Project

	P R E - 2 0 2 1	2 0 2 1	2 0 2 2	2 0 2 3	2 0 2 4	2 0 2 5
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 <sub>2</sub> Reporting

### Kwinana Cobalt Refinery

	P R E - 2 0 2 1	2 0 2 1	2 0 2 2	2 0 2 3	2 0 2 4	2 0 2 5
Milestones				WA Refinery Announced Definitive Feasibility Study	Completion of financing Operating Permits Commence Construction	Complete Construction Commence Operations
	P R E - 2 0 2 3			M I L E S T O N E S		

**DFS  
Consultants**

**Worley**  
energy | chemicals | resources



**srk**

ASX: COB

Source: Cobalt Blue Holdings Limited



# 24-month Milestones / Timeline

## Kwinana

Cobalt Refinery

	23	2024				2025			
	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
DFS Published (BHCP / KCR)									
KCR Refinery Development Program									
KCR Permitting Studies									
Testing intermediate samples at BHCP Demo Plant									
EIS Submission / Operating Permits									
KCR 3rd party supply / offtake contracts									
KCR Completion of Financing									
KCR Construction Commence									
KCR Construction Completed									

## Broken Hill

Cobalt Project

	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
BHCP Completion of Financing									
BHCP Construction Commence									

ASX: COB

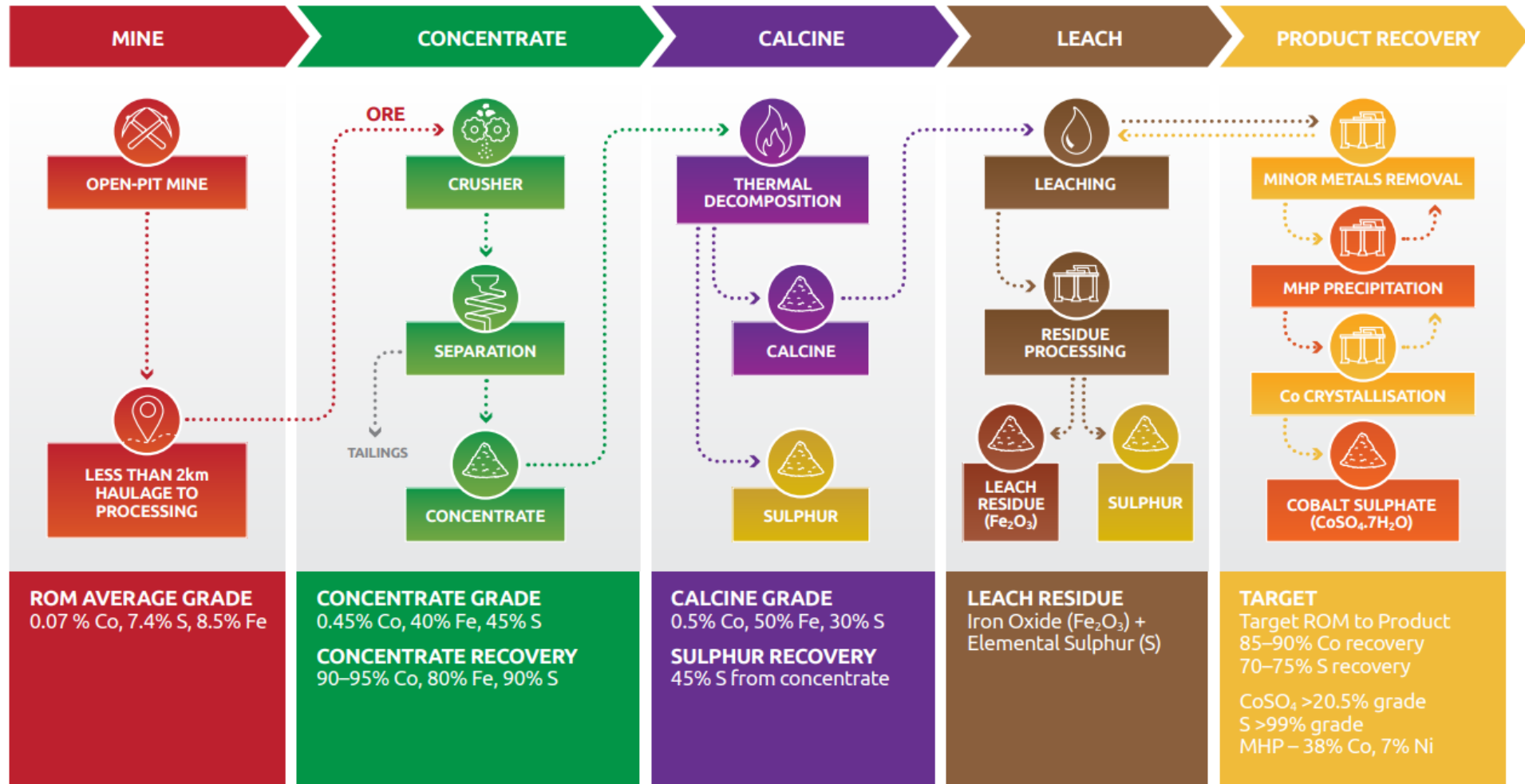
Source: Rho Motion, Benchmark Minerals, Cobalt Blue Holdings Limited





# Cobalt Sulphate Production Flowsheet

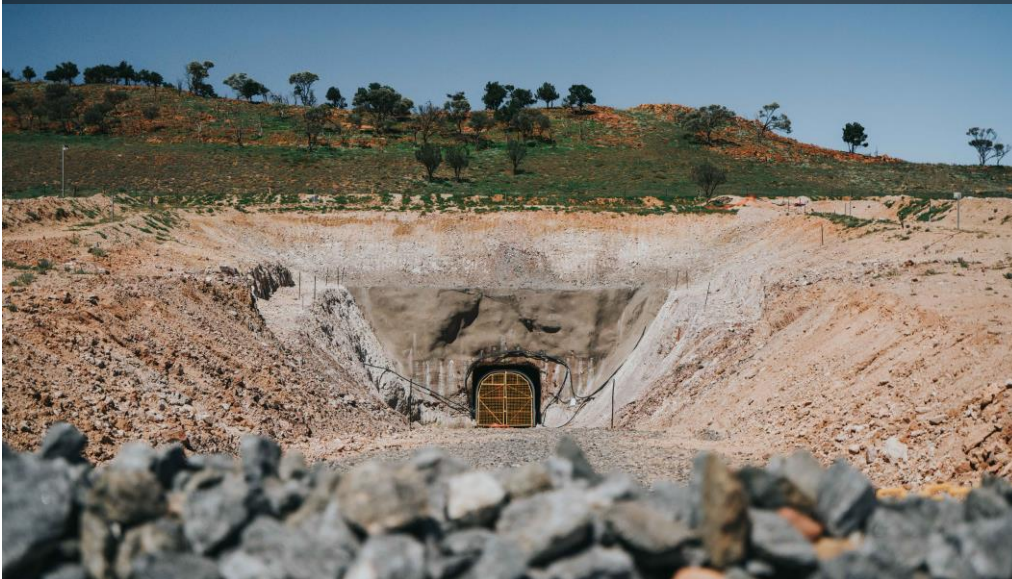
## Conventional operational steps, unique sequence



# Demonstration Plant

Study Level	Period	Concentrate Circuit		Pyrolysis Circuit		
Pilot Plant	2021	45–50 t	Continuous pilot circuit 2–3 t/hr	15 t	Commercial sized furnace 100–150 kg/hr	1t batches
Demonstration Plant	2022/23	4,200 t	Mobile plant 10–15 t/hr	680t	Commercial sized furnace 150-300 kg/hr	50–100 t

**Underground Portal**



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Source: Cobalt Blue Holdings Limited

**Concentrator Circuit**



12





# Demonstration Plant



**Pyrite Concentrate, avg 4400 ppm**



**Kiln converts pyrite into pyrrhotite & sulphur**



# Demonstration Plant



MHP (30% Co, 7% Ni) & Cobalt Sulphate (20% Co)



Elemental Sulphur



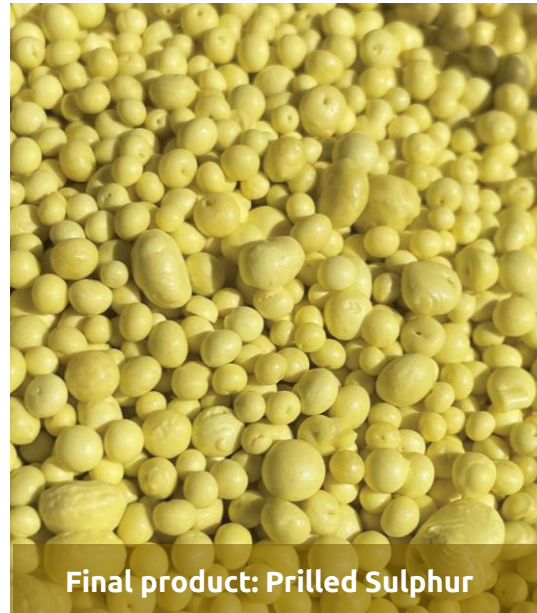
# COB Sulphur product

## BHCP will produce ~300ktp Elemental Sulphur as a byproduct

- With no domestic elemental sulphur production in Australia, ~1.5mtpa is imported for the fertilizer and mining industry.
- Sulphur has a low hazardous rating and is relatively simple to handle and transport.



Raw sulphur recovered from kiln



Final product: Prilled Sulphur

## Sulphur Content and Impurities

Assay analysis  
conducted by  
BV Calgary  
August 2023



Sulphur Content (LOI)	99.98%
Ash	0.01%
Other components (burning at 600°C)	0.01%

## Trace Metals

	ppm		ppm
Sb	<0.5	Mo	<0.5
As	<0.5	Ni	<0.5
Ba	<0.5	Se	<0.5
Be	<0.5	Ag	<0.5
Cd	<0.5	Tl	<0.5
Cr	<0.5	Sn	<0.5
Co	<0.5	U	<0.5
Cu	<0.5	V	<0.5
Pb	<0.5	Zn	<0.5
Hg	<0.5		



# Project Financing

## Potential Sources of Debt Funding

- Australian Government agencies e.g. Export Finance Australia, CEFC, National Reconstruction Fund
- Foreign agencies e.g. K-Sure, JBIC/NEXI, KfW (with UFK or EulerHermes support)
- Commercial banks

## Opportunity

- Catalytic role for the Government through agency support
- Potential for early roll out of NRF support for the development of a cobalt sulphate refinery

## Constraints/Issues

- Capital cost increases/inflation
- Cobalt price volatility
- Lack of commercial bank appetite





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# Sustainability Self Assessment and Roadmap

## COB produces annual reporting to meet the requirements of:

- [The Cobalt Institute Responsible Assessment Framework \(CIRAF\)](#)  
Framework on how to respond to and manage four risk categories and nine risk areas relating to responsible production and sourcing.
- [Initiative for Responsible Mining Assurance \(IRMA\)](#)  
Independent assessment against a comprehensive standard providing 'one-stop coverage' of the full range of issues related to the impacts of industrial-scale mines.

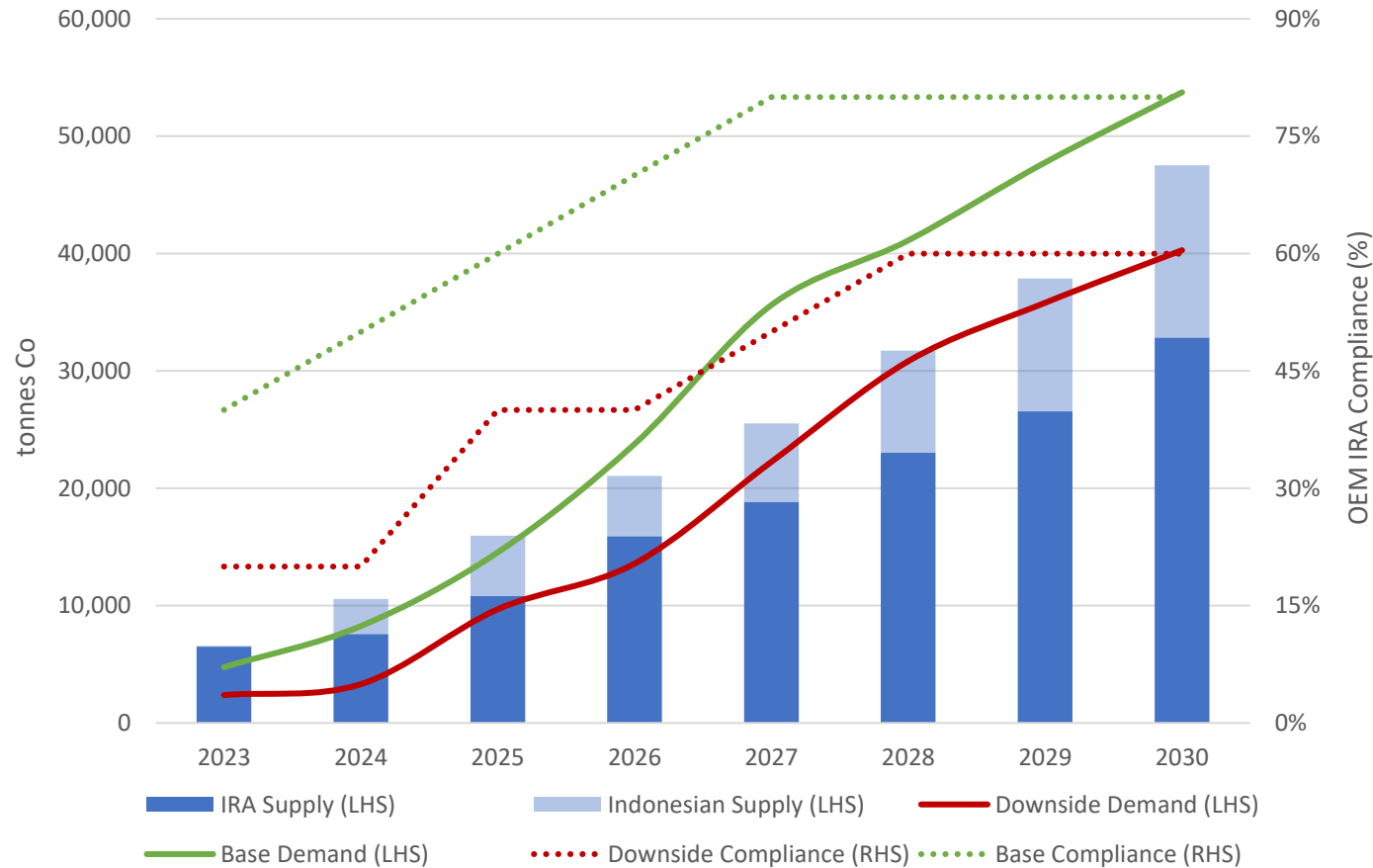
COB has also been working with the Australian Government to promote a "Made in Australia" ESG certification scheme for critical minerals extracted and/or refined in Australia.





# IRA Compliant Cobalt Shortage from 2024

## IRA Compliant (+ Indonesian) Refined Cobalt Market Balance



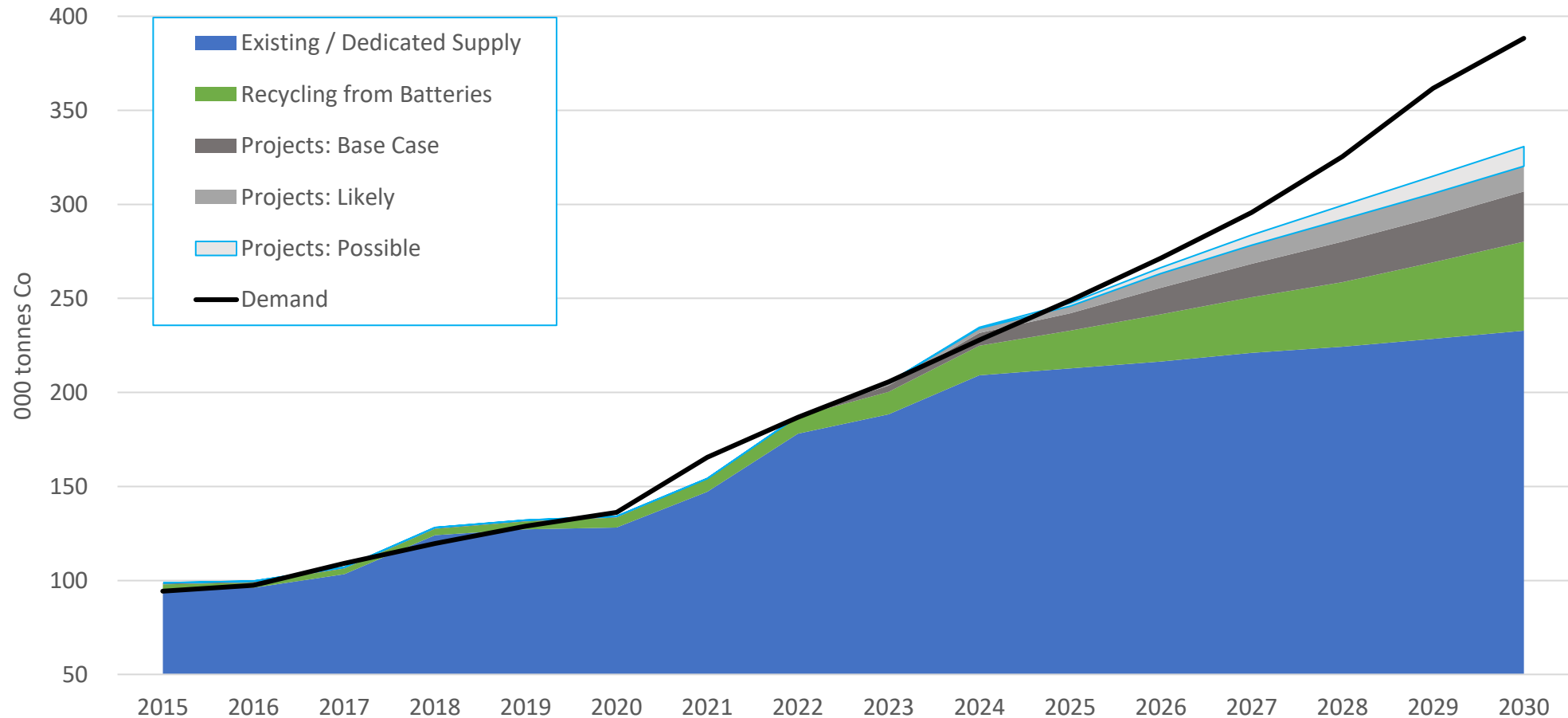
ASX: COB

Source: Cobalt Blue Holdings Limited, Benchmark Minerals, Rho Motion



# Cobalt Future of Supply & Demand

Another ~50ktpa is required by 2025, reaching another ~150ktpa by 2030



ASX: COB

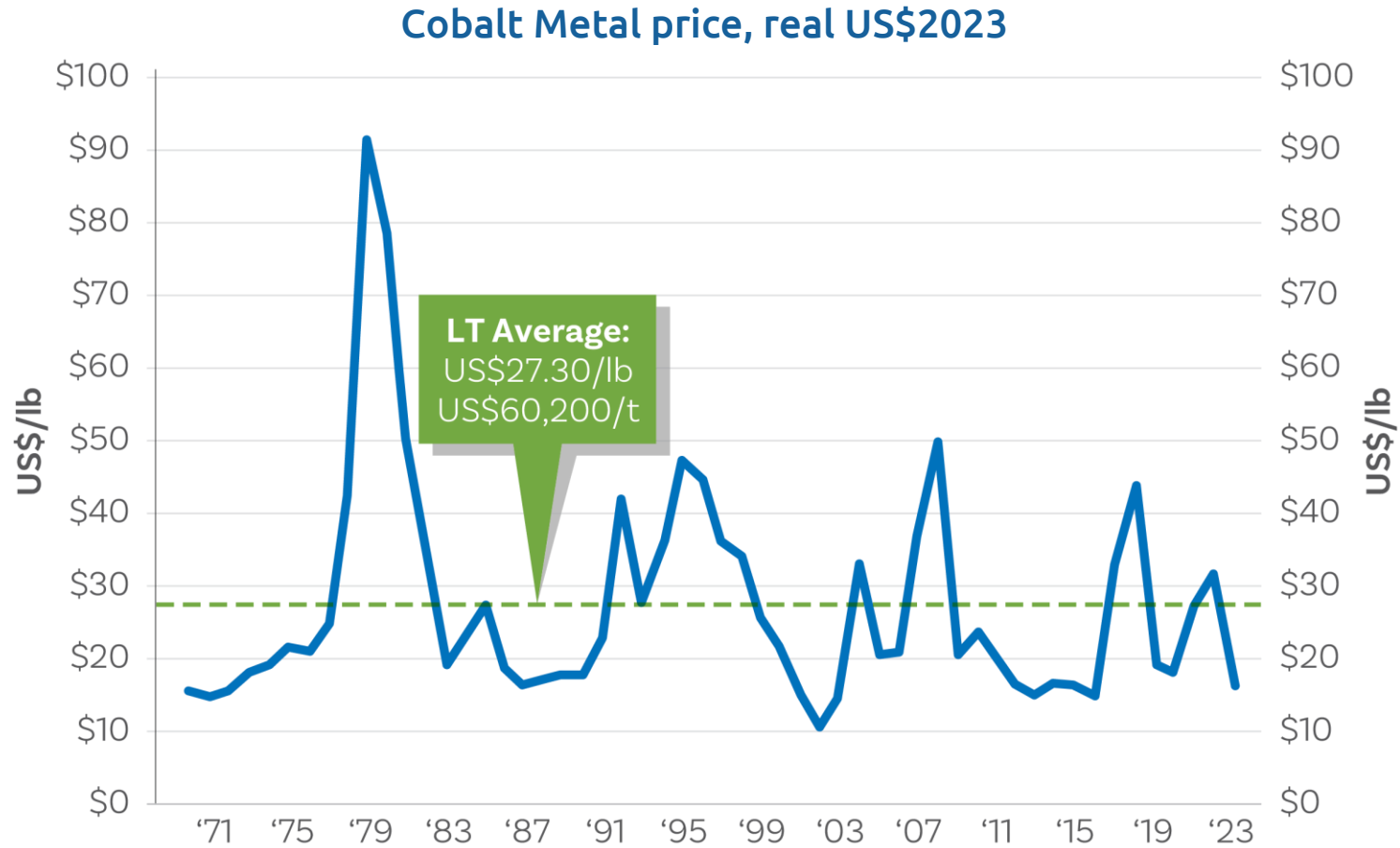
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Source: Cobalt Blue Holdings Limited, Benchmark Minerals, Rho Motion





# Long-term cobalt price cycle



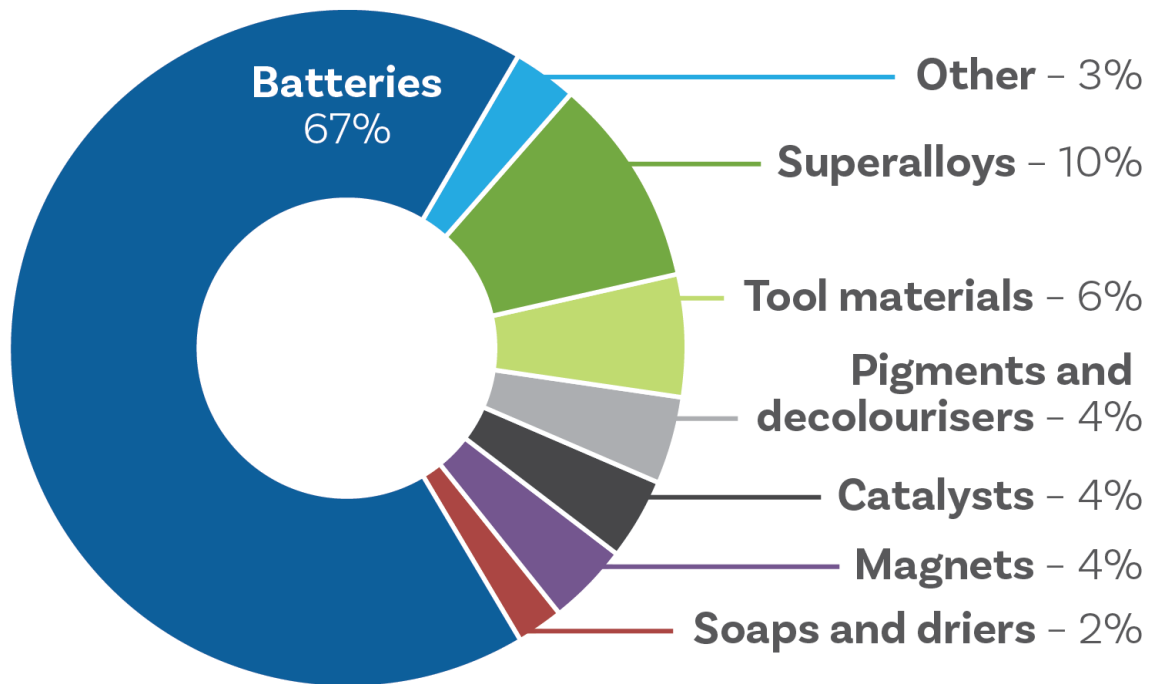
ASX: COB

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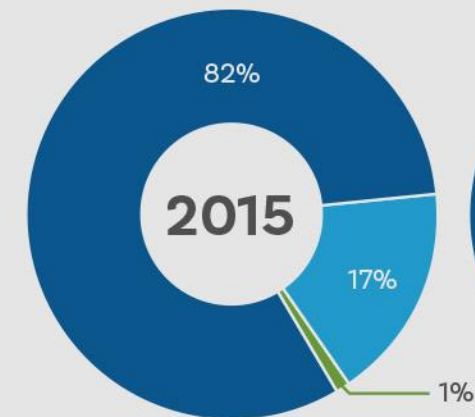


# The Cobalt Market

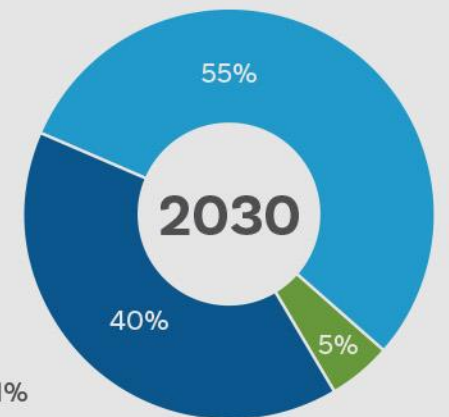
## Cobalt's current end-use



## Cobalt's 2015 battery end-use



## Cobalt's 2030 battery end-use



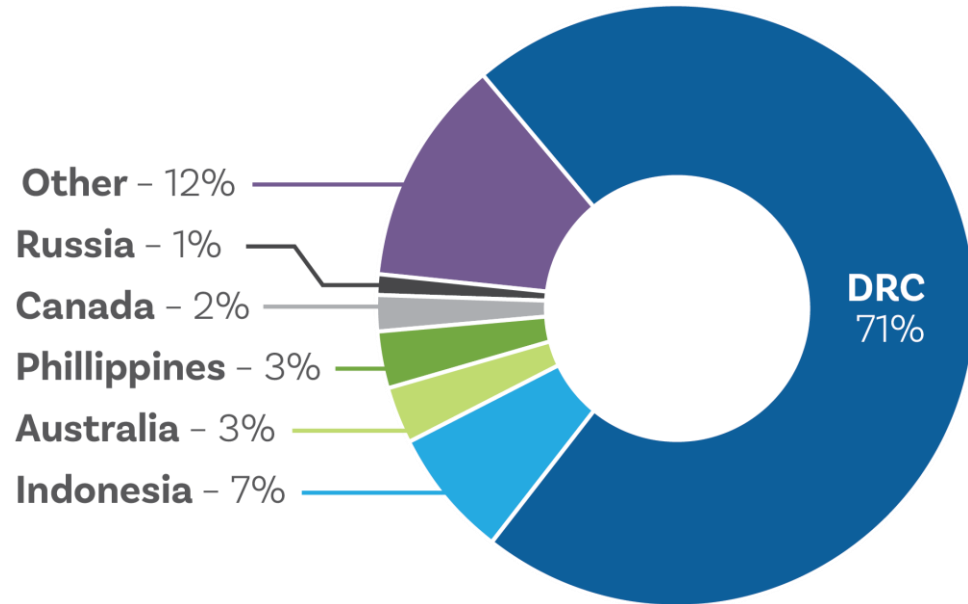
- Portable electronics
- Electric Vehicles (EVs)
- ESS (Energy Storage Systems)





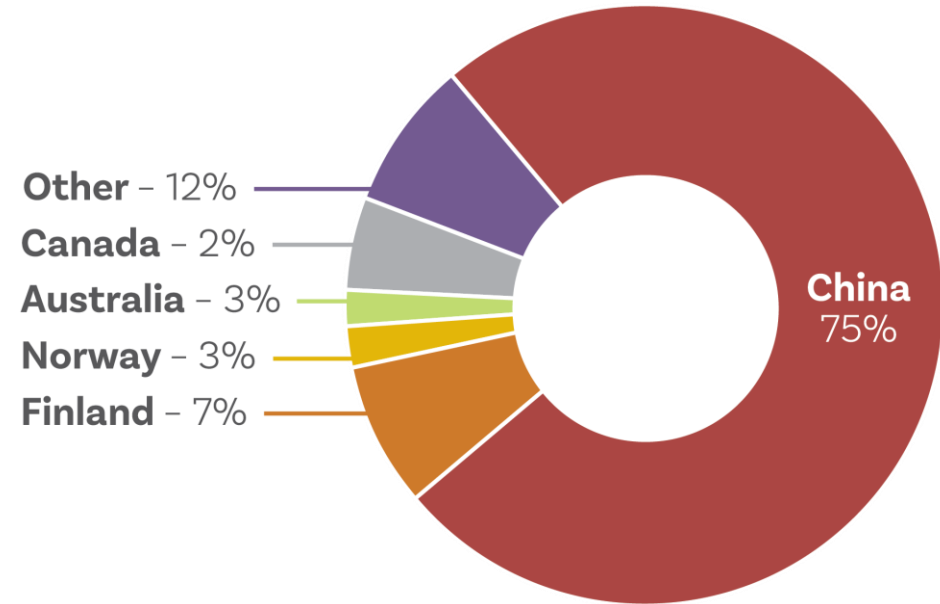
# Cobalt – Supply Sources

## Mined Supply



*China controls 15 of the 17 major DRC cobalt mines*

## Refined Supply

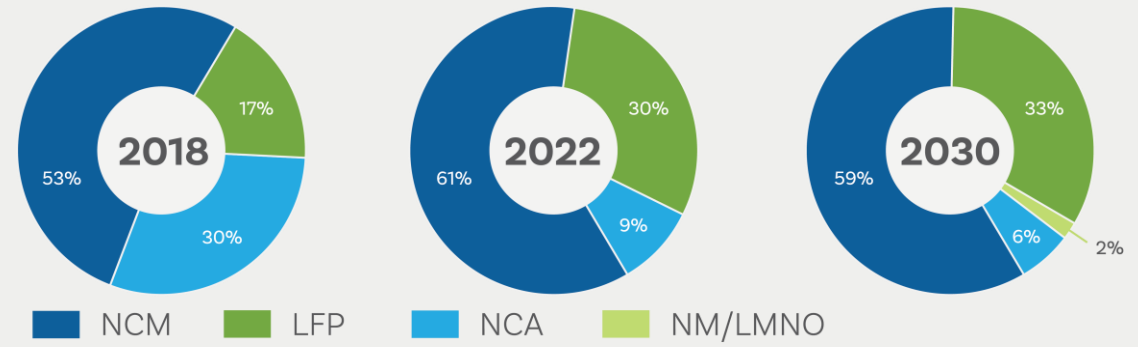


# NCM vs LFP

Most EV batteries today use one of two types of cathodes:

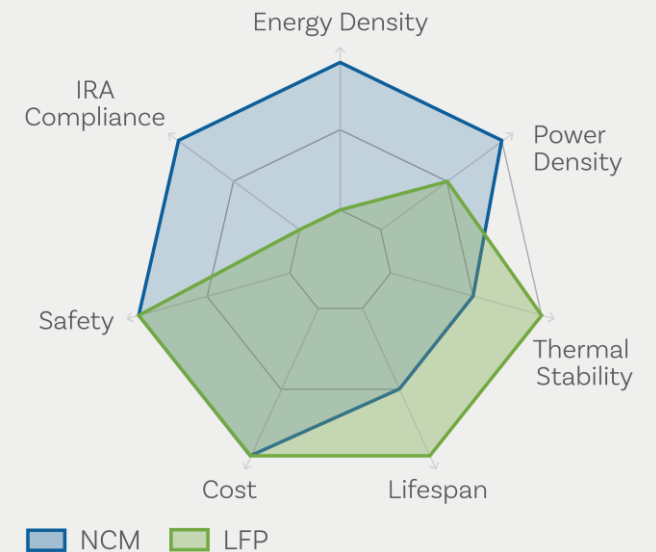
- Nickel Cobalt Manganese (**NCM**) cathodes (N America, Europe):
  - Capable of storing more energy
  - Superior life spans
  - Superior thermal stability, thus safer
  - Use materials with price volatility (nickel, cobalt).
- Lithium Iron Phosphate (**LFP**). LFP cathodes (China)
  - Less energy efficient (due to weight)
  - Slower cold-weather charging
  - Little capacity ex-China
  - Safer in higher temperatures or demanding conditions
  - Use less costly materials (iron, phosphate)

## Li-ion EV battery cell chemistry market share



	LFP	NCM
Energy Density	●	● ● ●
Power Density	● ●	● ● ●
Thermal Stability	● ● ●	● ●
Lifespan	● ● ●	● ●
Cost	● ● ●	● ● ●
Safety	● ● ●	● ● ●
IRA Compliance	●	● ● ●

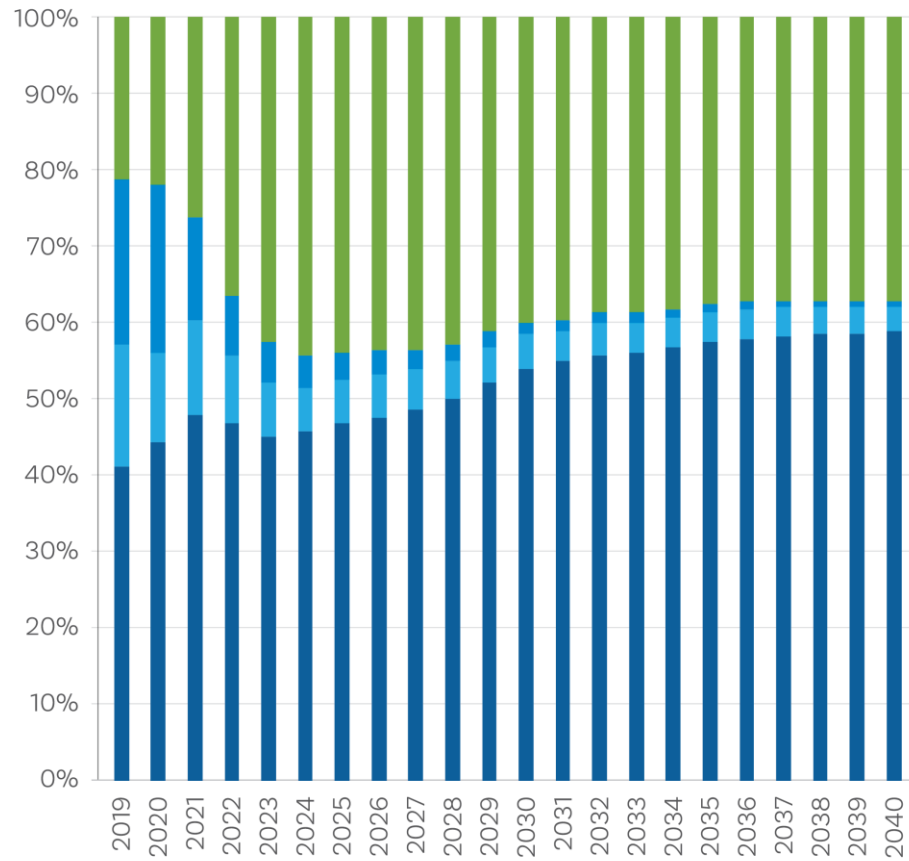
● ● ● Excellent   ● ● Good   ● Poor



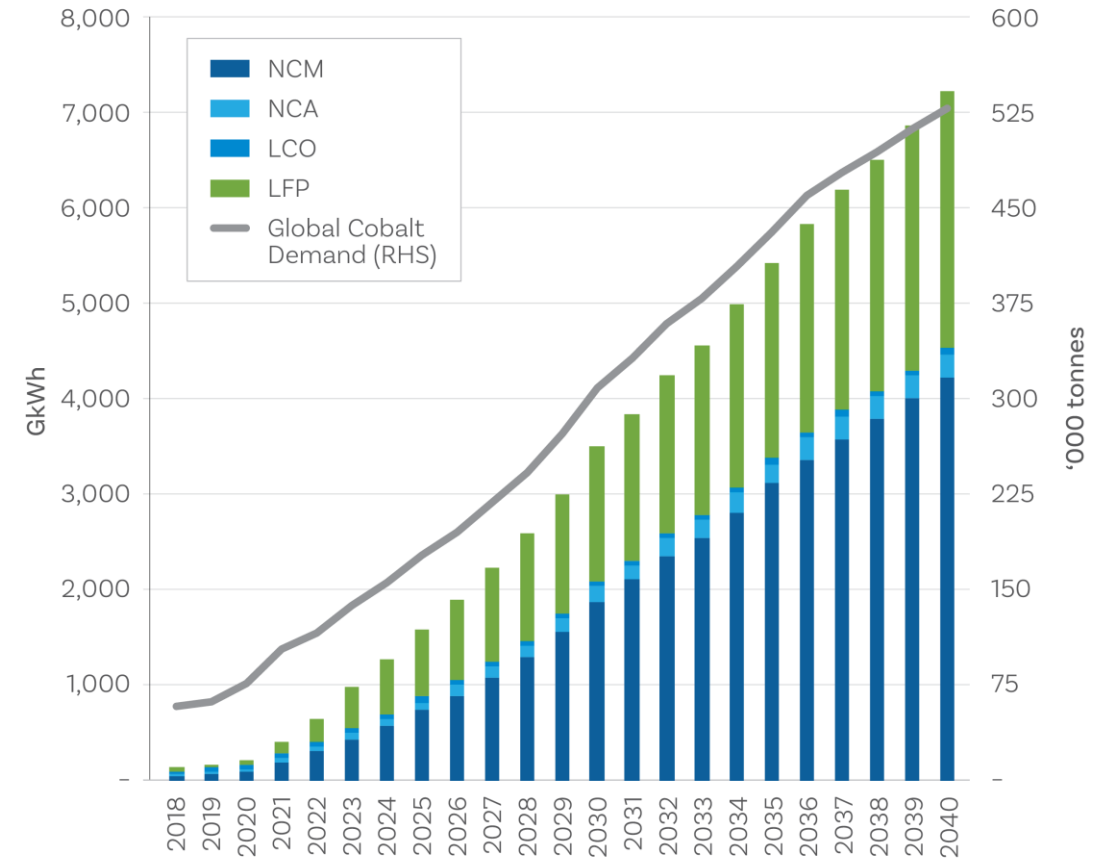


# NCM vs LFP outlook

## Li-ion battery cell chemistry market share



## Li-ion battery cell chemistry growth vs cobalt demand



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