

Q3 2018

Investor Presentation

COB : ASX





Cobalt Blue – Company Overview

The Thackaringa Cobalt Project

Cobalt Blue Holdings Limited (COB) is a cobalt exploration/development company focussed on the development of the Thackaringa Cobalt Project in New South Wales.

The Thackaringa Project is 23 km west of Broken Hill and 400km by rail from Port Pirie, consists of four granted tenements (EL6622, EL8143, ML86 and ML87) with total area of 63km². The main targets for exploration are large-tonnage cobalt-bearing pyrite deposits.

The project area is under-explored, with the vast majority of historical exploration directed at or around the outcropping pyritic cobalt deposits at Pyrite Hill, the Railway Deposit and Big Hill.

Capital Structure

ASX Code:	COB
Share Price (15 August 2018):	\$0.57
Shares:	116.1m
Options:	24.4m
Market Capitalisation (undiluted):	A\$66m
Cash @1 July 2018:	A\$9.8m
Liabilities:	nil

Major Shareholders

Board/Executives	9.2%
Hill Family Group	7.1%
LG International	6.1%

The Cobalt Blue Team

“Extensive expertise in mineral exploration and mine development, investment management, corporate law and energy storage.”



Chief Executive Officer – Joe Kaderavek

- Deutsche Bank, Head of Resources, equities / investment management, resources and energy storage technology focus
- PricewaterhouseCoopers performing operational reviews and strategic assessments across mining, minerals processing, railway and port facilities throughout Australia, North America and Europe; worked extensively on secondment to BHPB and Rio Tinto
- International consulting role focused on renewable energy / battery storage technologies

Executive Manager – Dr Andrew Tong

- Metallurgist with nearly 15 years experience in project development, operating mining and processing activities, and patenting innovative minerals processing technology
- Non-executive director of Northern Territories Resources Pty Ltd
- Owner of Minerals and Residues Pty Ltd, which provides metallurgical consulting and testwork, and corporate management and advisory services
- Formerly CEO of Compass Resources (Australia), and CEO of Goldsmith Resources (Peru)

Independent Chairman – Robert Biancardi

Independent Director – Hugh Keller

Independent Director – Matt Hill

More Information

Email

ASX Code

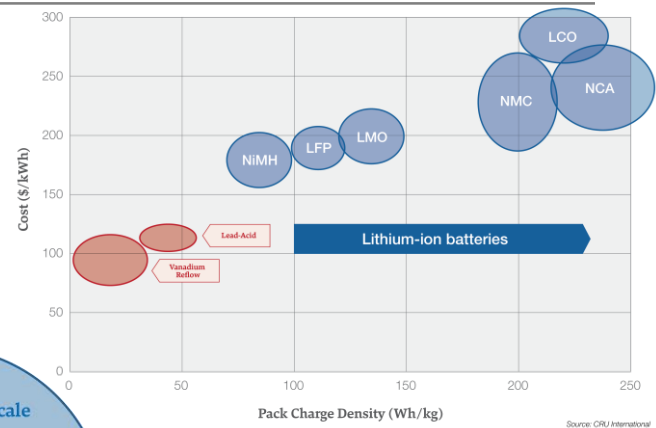
www.cobaltblueholdings.com

joe.kaderavek@cobaltblueholdings.com

COB

Li ion & Cobalt Cathodes – Strong EV Credentials

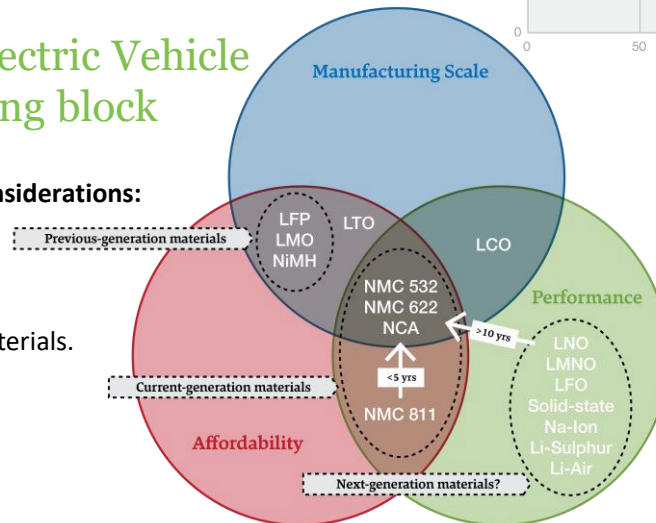
- **NMC/NCA:** EV nickel-cobalt battery chemistries.
- **LFP/LMO:** Cheaper battery chemistries.
- **Nickel-Metal Hydride:** Phased out of EV sector.
- **Lead-Acid/Vanadium:** Energy storage applications.



Cobalt = Electric Vehicle
building block

Other important considerations:

- Safety.
- Cycle lifespan.
- Availability of materials.
- Partnerships.

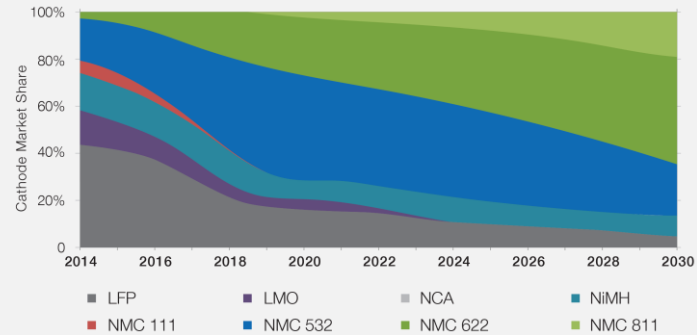


NMC = Nickel Manganese Cobalt
NCA = Nickel Cobalt Aluminium Oxide

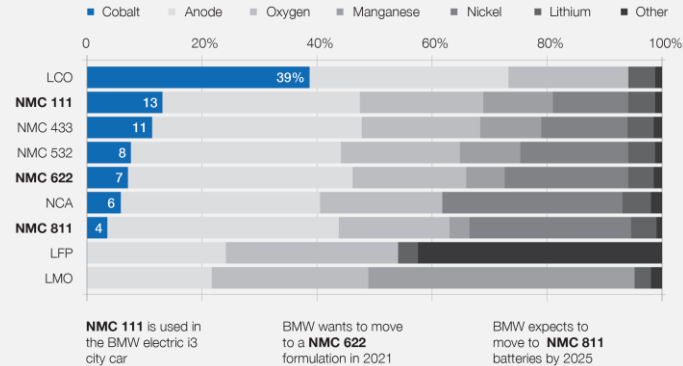
Source: CRU International

Battery Cathode - Adoption

NMC 532/622
- dominant
chemistry



Cobalt proportion
in various battery
chemistries:

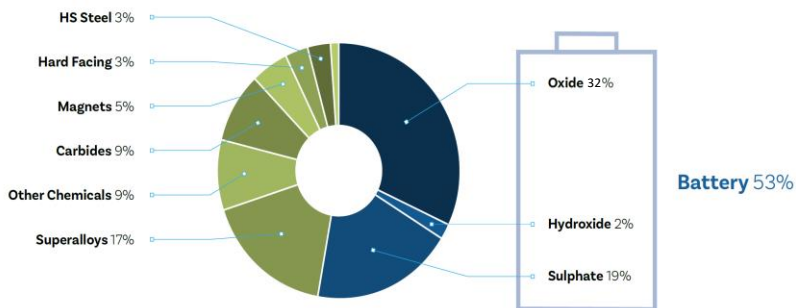


Source: Cobalt Blue Holdings Ltd

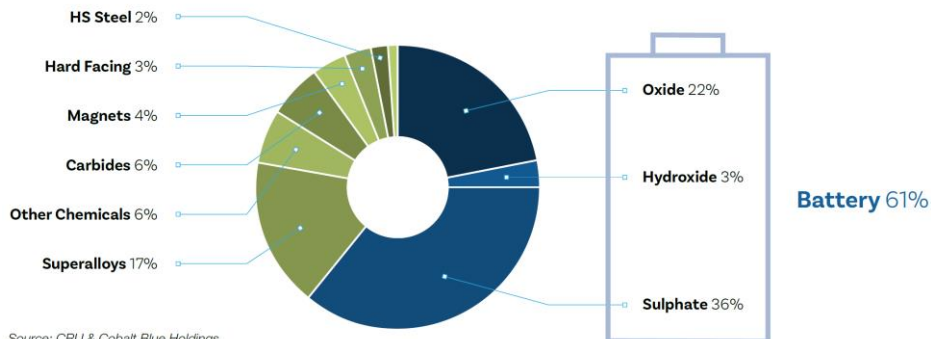
Cobalt Demand +70% next decade

.....driven by >300% Cobalt Sulphate

Cobalt Demand 2017 – Actual

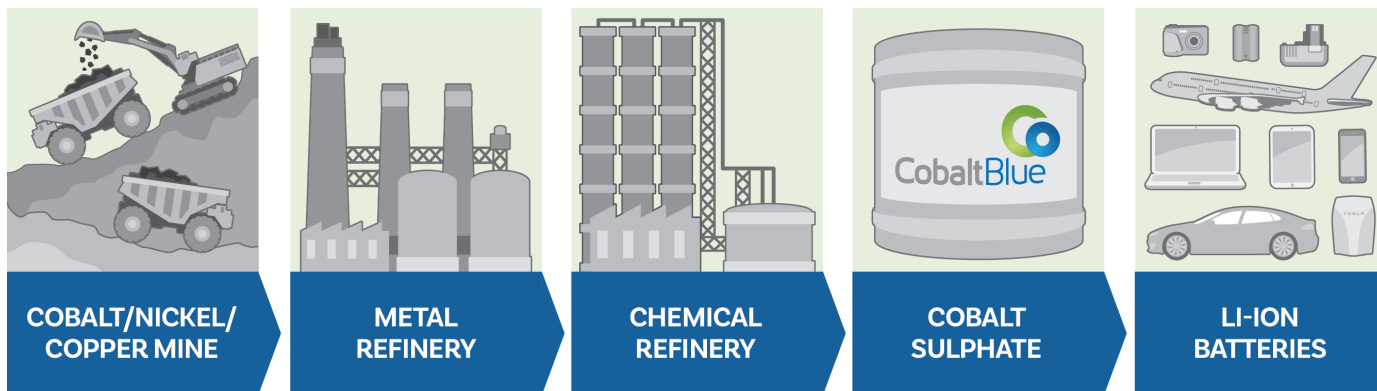


Cobalt Demand 2026 – Forecast



Source: CRU & Cobalt Blue Holdings

Thackaringa – Mine to Battery Strategy



Co ~25-35% payable
Traditional Cobalt Model

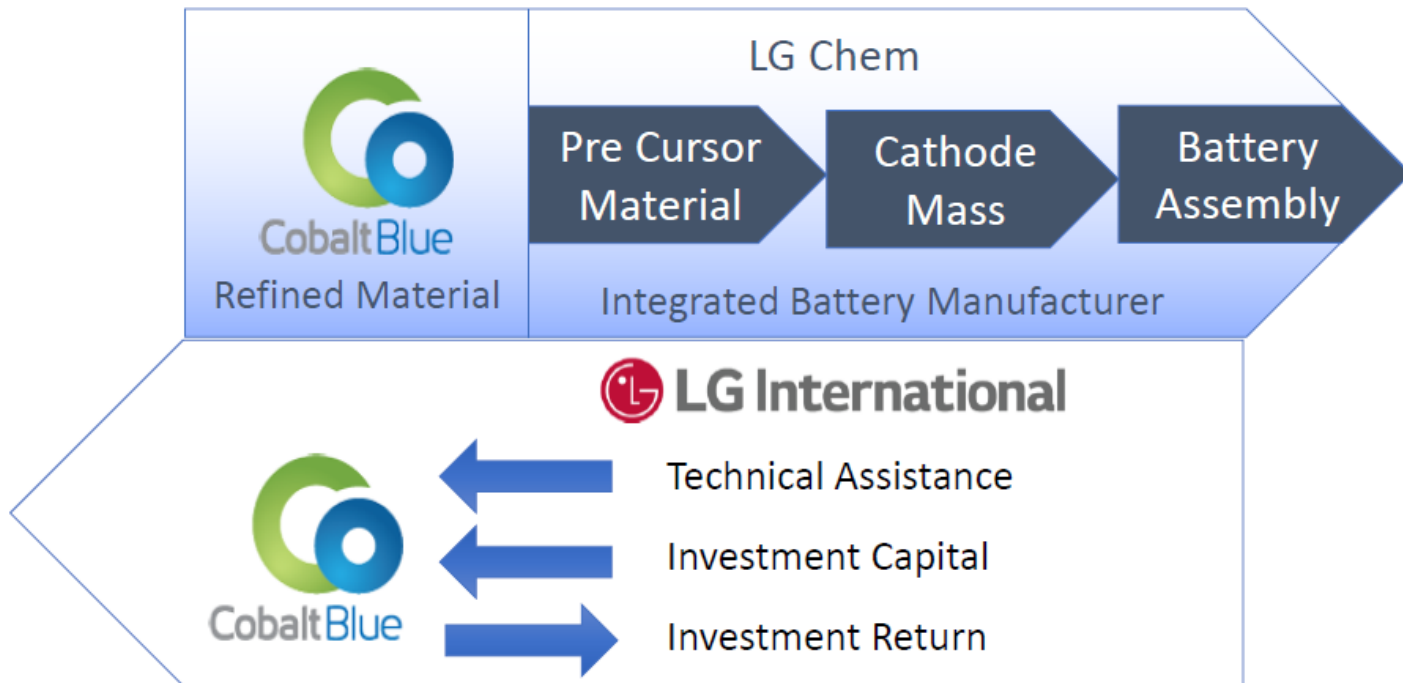


Co ~105% payable
COB Model

Source: Cobalt Blue Holdings Ltd

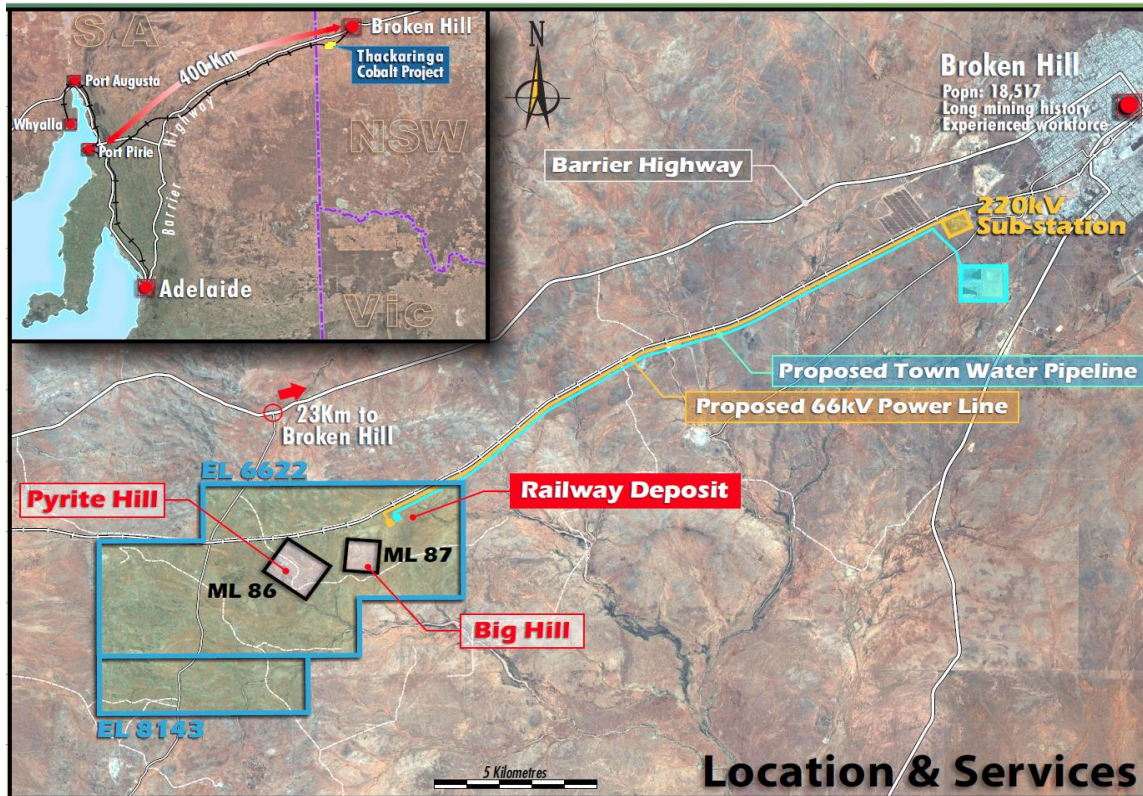
LGI & COB - First Mover Strategy

Strategic Partnership



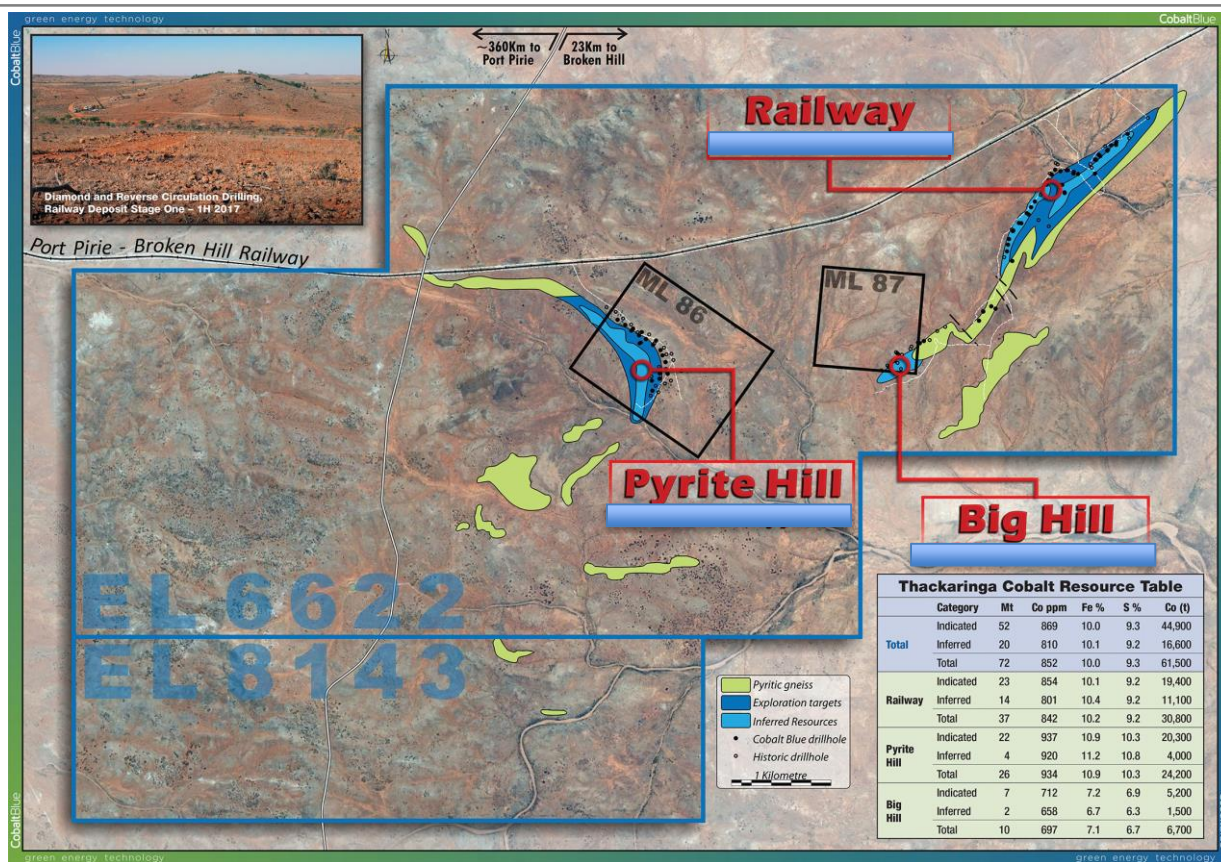
Source: Cobalt Blue Holdings Ltd

Thackaringa – People, Power, Water, Road, Rail



Source: Cobalt Blue Holdings Ltd

Thackaringa – Deposit Layout



Thackaringa – Significant Defined Resources

Category	Mt	Co ppm	Fe %	S %	Pyrite % ¹	Contained Co (t)	Py Mt	Density
Railway (at a 500ppm Co cut-off)								
Indicated	23	854	10.1	9.2	17	19,400	4	2.85
Inferred	14	801	10.4	9.2	17	11,100	2	2.85
Total	37	842	10.2	9.2	17	30,800	6	2.85
Big Hill (at a 500ppm Co cut-off)								
Indicated	7	712	7.2	6.9	13	5,200	1	2.77
Inferred	2	658	6.7	6.3	12	1,500	0	2.76
Total	10	697	7.1	6.7	13	6,700	1	2.77
Pyrite Hill (at a 500ppm Co cut-off)								
Indicated	22	937	10.9	10.3	19	20,300	4	2.87
Inferred	4	920	11.2	10.8	20	4,000	1	2.89
Total	26	934	10.9	10.3	19	24,200	5	2.88
Total (at a 500ppm Co cut-off)								
Indicated	52	869	10.0	9.3	17	44,900	9	2.85
Inferred	20	810	10.1	9.2	17	16,600	4	2.85
Total	72	852	10.0	9.3	17	61,500	13	2.85

Source: Cobalt Blue Holdings Ltd

COB – Reserve & Production Targets

Thackaringa Cobalt Project – Ore Reserve Tonnage and Grade

(Note: Minor rounding errors may have occurred in the compilation of this table)

	Tonnes (Mt)	Co (ppm)	S (%)
Proved	–	–	–
Probable	46.3	819	8.83
Total Tonnes	46.3	819	8.83

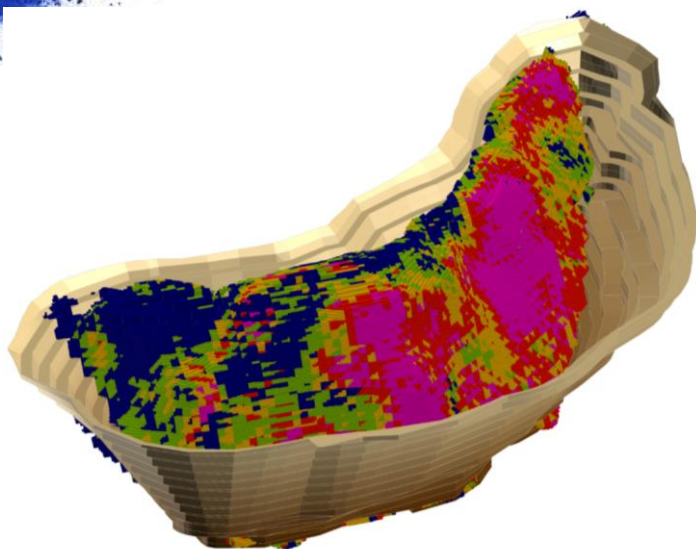
Source: Mining One

Thackaringa Cobalt Project – Upside Production Target

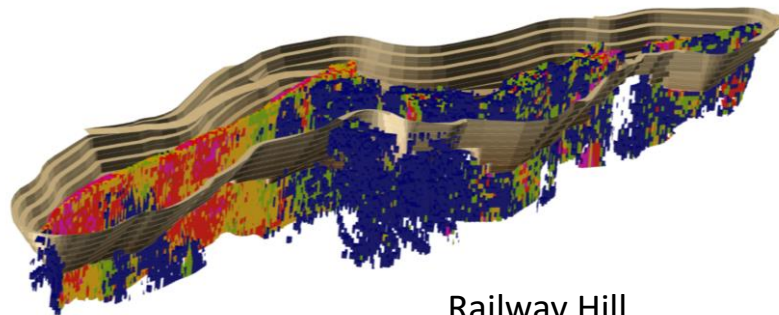
Tonnes (Mt)	Co (ppm)	S (%)
58.7	802	8.7

Source: Mining One

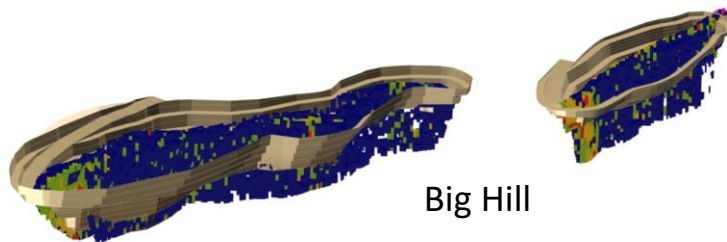
COB – Production Target Pits & Resource Models



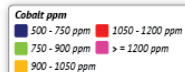
Pyrite Hill



Railway Hill



Big Hill



Source: Cobalt Blue Holdings Ltd





COB – PFS Economics

Summary of Product Target Financial Model

Throughput, CAPEX, Costs	Input	Comments
Plant Capex (±25%)	A\$550m	Incl A\$66m in contingency, excl \$23m pre-strip
Plant throughput	5.25 Mtpa	Following commissioning period
Cobalt production (metal in sulphate)	3,558 tpa	Average over first 10 years post ramp-up
Cobalt production (metal in sulphate)	40,331 tonnes	LOM Total
C1 Cash Cost (incl sulphur credit)	US\$12.80/lb	Average based on Production Target
Initial mine life (Production Target)	12.8 years	Production Target 58.7mt @ 802ppm cobalt
Macro Assumptions	Input	Comments
A\$/US\$ Exchange Rate	Fwd curve	2018 \$0.75, 2019 \$0.73, 2020 \$0.71, 2021 \$0.71 then \$0.70 onwards
Avg LOM Cobalt Sulphate Price	US\$33.80/lb	Independent expert – CRU International
Avg LOM Sulphur Price (landed in Aus)	US\$145/t	Independent expert – CRU International
Financial Metrics	Input	Comments
Pre Tax NPV (8%)	A\$792m	Based on Production Target
Pre Tax IRR (%)	27.0%	
Post Tax (7.5%)	A\$544m	
Post Tax IRR (%)	22.0%	
Project Payback (simple)	4 years	

Source: Cobalt Blue



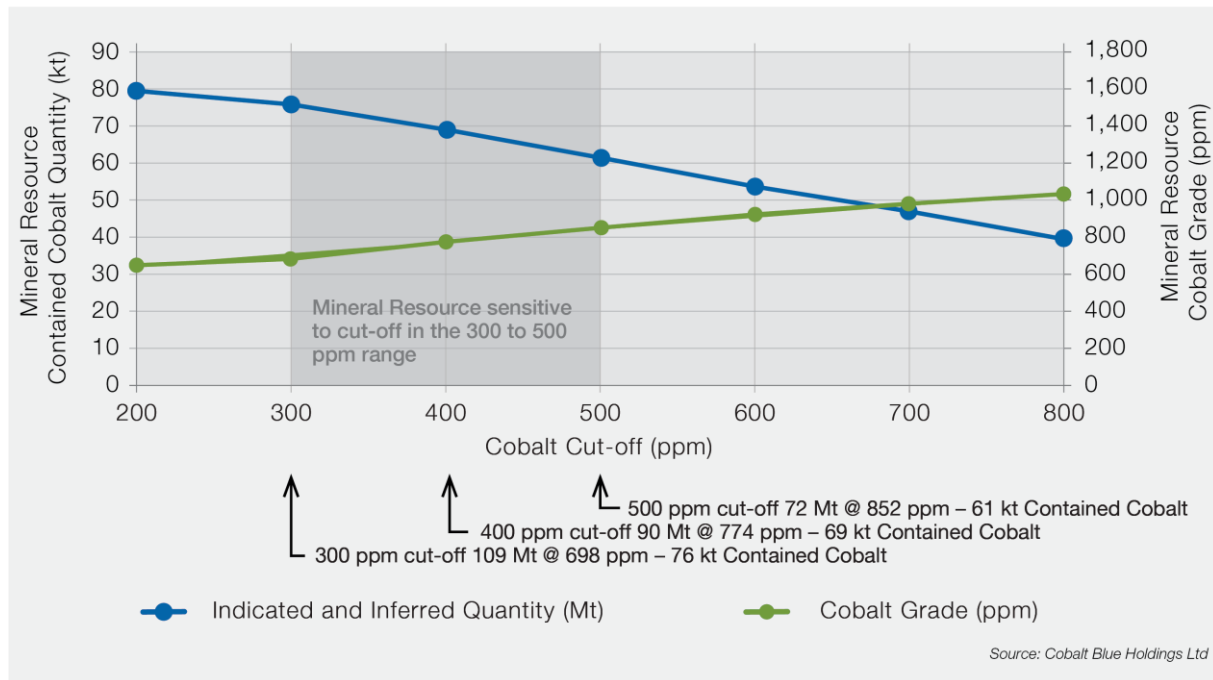
COB – Improved Economics - 12 Month Catalysts

Four key optimisation opportunities:

- ❑ **Process plant tailings handling and storage:** LOM management of tailings (Capex + Opex). (Q4 2018).
- ❑ **Metal recoveries:** Design criteria used during the PFS was based on batch testwork. Larger scale testing will be conducted during the BFS targeting increased metal recoveries. (Q2 2019).
- ❑ **Power pricing:** Power represents 22% of site cash costs. Focus upon energy storage (batteries), process plant operating philosophies, frequency & grid stability options. (Q2 2019).
- ❑ **Mine life:** Extend project life by treating ore from inferred inventories from known resources and from other sources beyond Thackaringa. (Q1 2019).

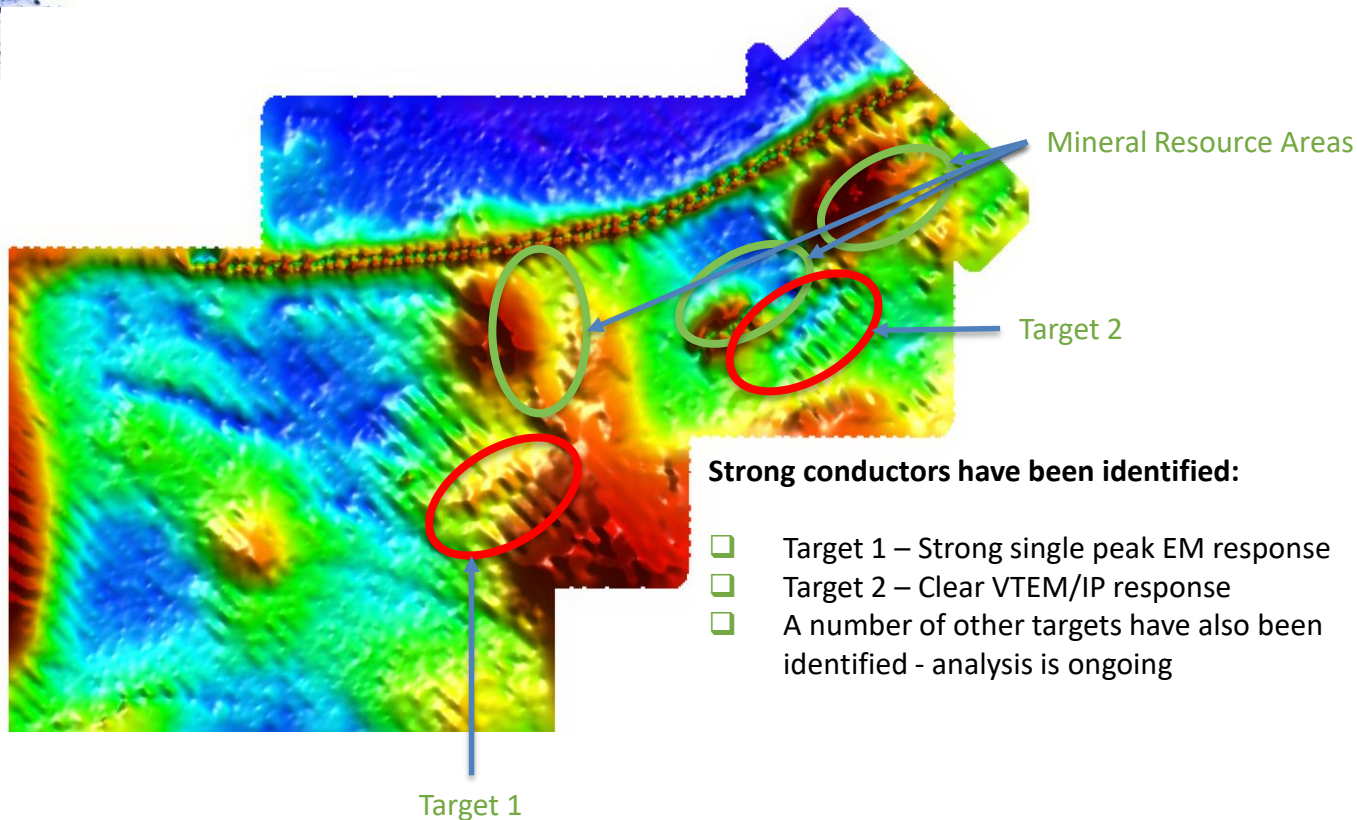
Thackaringa – Grade Tonnage Curve

Contained Cobalt – Mineral Resource Grade Tonnage Curve – Total Indicated and Inferred



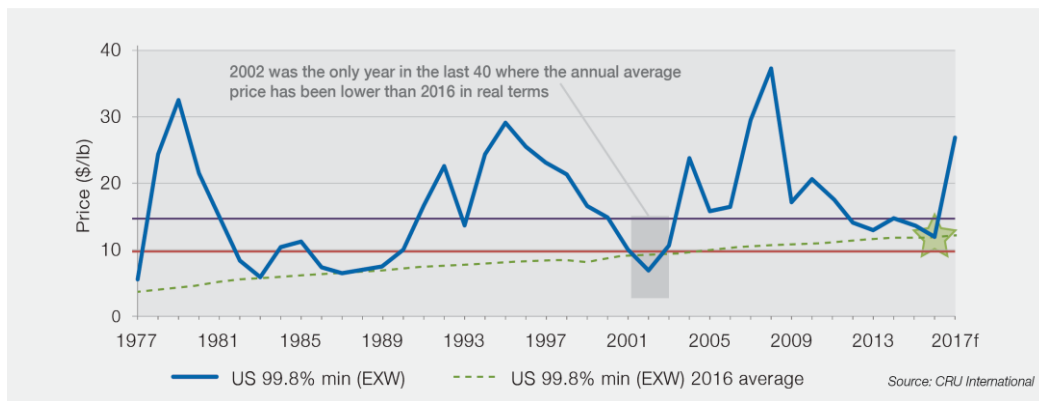
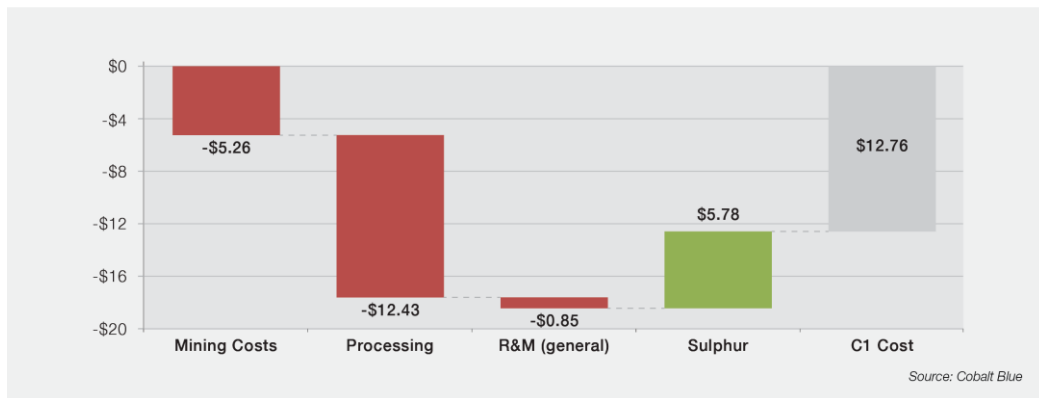
These estimates of Mineral Resources were first announced by Cobalt Blue Holdings Ltd in *Thackaringa – Significant Mineral Resource upgrade - 19 March 2018*. The Company confirms that it is not aware of any new information or data that materially affects the information included in that announcement, and all material assumptions and technical parameters underpinning the estimates in that announcement continue to apply and have not materially changed.

Thackaringa – “Blue Sky” Geophysics



Source: Cobalt Blue Holdings Ltd

Thackaringa – Resilient Economics



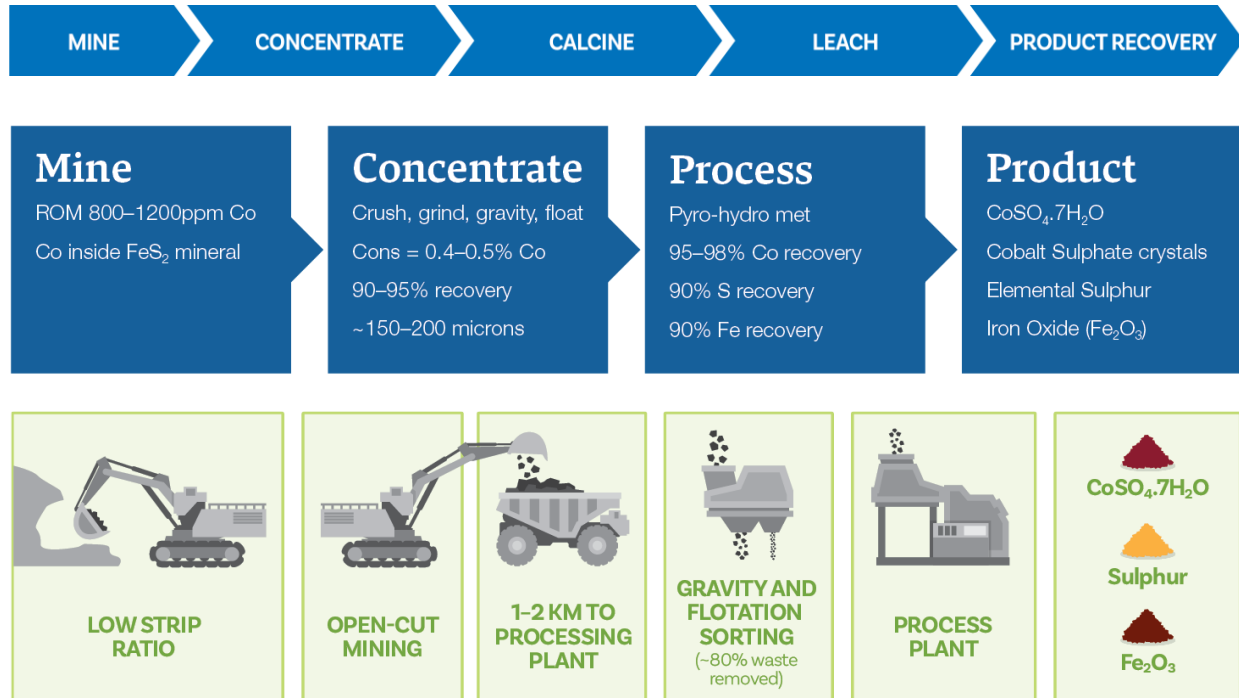
Thackaringa – Global Operations Comparisons

New global projects running at 3 to 4x COB capital intensity

Project	US\$ Capex	Cobalt (tpa)	By-products	Cobalt (% revenue)	Cobalt Payable (% LME)	Mine Life (years)	Capital Intensity (US\$/t Co)
Thackaringa Cobalt (Aust)	413	3,600	Sulphur	80%	100%	Target >20	114,583
eCobalt (US)	210	1,000	Cu/Au		100%	13	210,000
Kabanga (Tanzania)	750	2,400	Ni				312,500
Kalgoorlie Nickel Project (Aust)	560	1,450	Nickel			> 20	385,862
Sunrise (Syerston) (Aust)	1,400	3,200	Ni/Sc		100%	> 20	437,500
Wellgreen Central (Canada)	450	1,000	Ni/Cu		?	20	450,000
Dumont (Canada)	1,030	2,000	Ni/Pt		35%	20	515,000
NICO (Canada)	589	500	Bi/Au		100%	> 20	1,178,000
NiWest (Aust)	725	1,400	Nickel			> 20	517,857

Source: Coy data, Cobalt Blue Holdings Ltd

Thackaringa - processing summary



Source: June 2017 Scoping Study – Cobalt Blue Holdings

Minimum target payment terms: 100% LME cobalt pricing

High-grade cobalt sulphate crystals possible for 5-10% premium margin

Processing – Global Operations



Comminution and Concentration via flotation

- ❑ Newcrest - 10mtpa pyrite ore via milling and flotation (Lihir Island - PNG)
- ❑ OZ Limited - 10mtpa copper ore milling, flotation of concentrate (Prominent Hill - Australia)

Concentration via spirals

- ❑ Illuka Resources - 600ktpa heavy mineral concentrate (Jacinth Ambrosia - Australia)

Pyrolysis

- ❑ Kinross Gold - Tasiat Project (Mauritania)
- ❑ PT Agincourt - Martabe Gold Project (Indonesia)
- ❑ Outotec – (1950-1970) pyrite reduction to elemental sulphur (Finland)

Leaching

- ❑ Vale S.A. - POX plant copper concentrates (Carajas region - Brazil)
- ❑ Flin Flon - Hudson Bay Mining & Smelting (Canada)

Product Recovery

- ❑ Sepon - SX Copper at 75ktpa (Laos)
- ❑ CoSO_4 crystallisation – (Democratic Republic of Congo)

Processing - Concentrate

MINE

CONCENTRATE

CALCINE

LEACH

PRODUCT RECOVERY

Testwork material - 820 kg of ore composited in August 2017.

Ore was crushed to p100 @ 1.2 mm and passed through a gravity spiral circuit. The tails were screened, with the fines subjected to froth flotation. The gravity and flotation concentrates were combined into a single concentrate.

Key outcomes:

- ❑ High (92%) cobalt recovery to concentrate from ore
- ❑ Cobalt recovery achieved with coarse crush size of 1.2 mm and gravity separation, indicating low capital and operating costs compared to fine milling and floating the entire ore



Concentrate testwork – simple gravity spirals delivering exceptional results

Source: Metallurgical testwork – Cobalt Blue Holdings

Processing – Calcine & Leach



100kg of concentrate was processed by ALS Metallurgy through calcine and leach unit operations as part of the PFS (Nov 2017 - Mar 2018).

The concentrate is thermally treated to remove some of the sulphur into the gas phase. The resulting solid calcine is then leached to extract cobalt into solution.

Key outcomes:

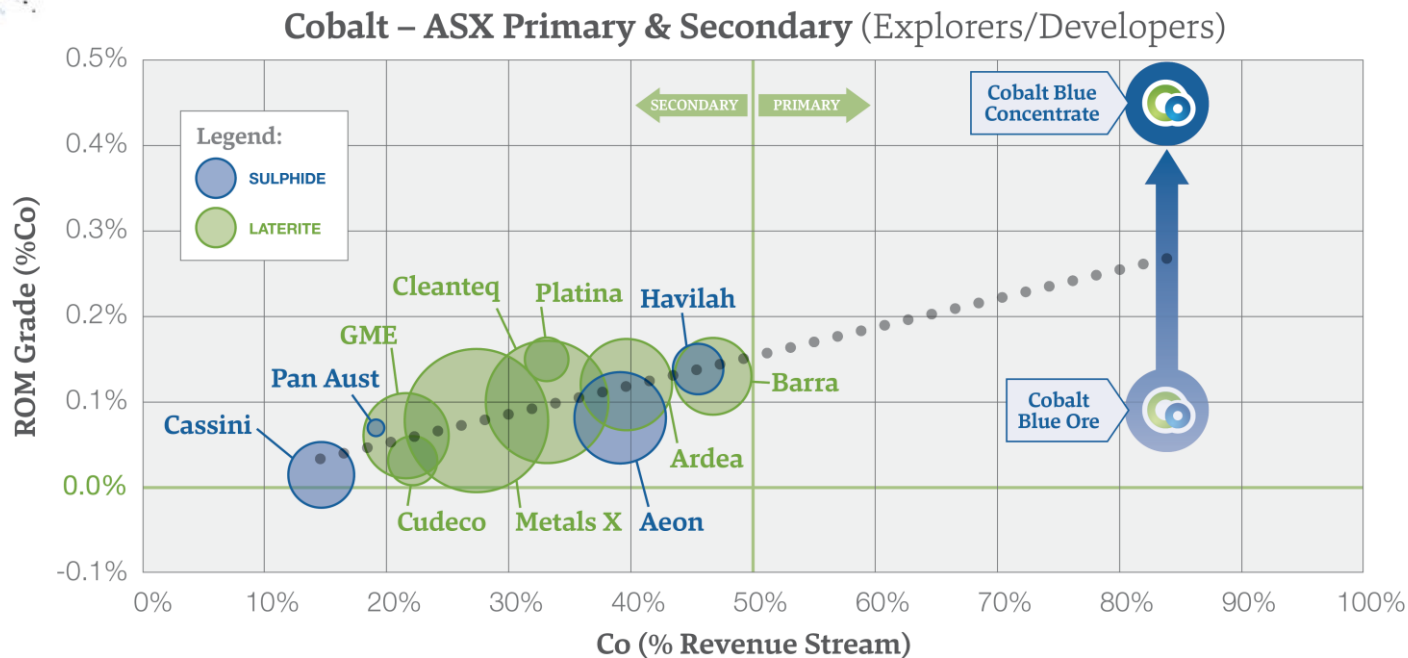
- ❑ Calcining the gravity concentrate typically removes ~35% of the sulphur from the pyrite
- ❑ The resulting elemental sulphur condensed from the gas phases averaged 97.5% Sulphur. Improved engineering design is expected to improve the quality of the sulphur in future testwork
- ❑ There are no losses of cobalt to the gas phases in the thermal treatment step
- ❑ Leaching of the calcine achieved cobalt recoveries of 95-98%.



Above: Laboratory-scale furnace & elemental sulphur condenser. **Below:** Photos of the feed concentrate, residual calcine and collected elemental sulphur.

Source: Metallurgical testwork – Cobalt Blue Holdings

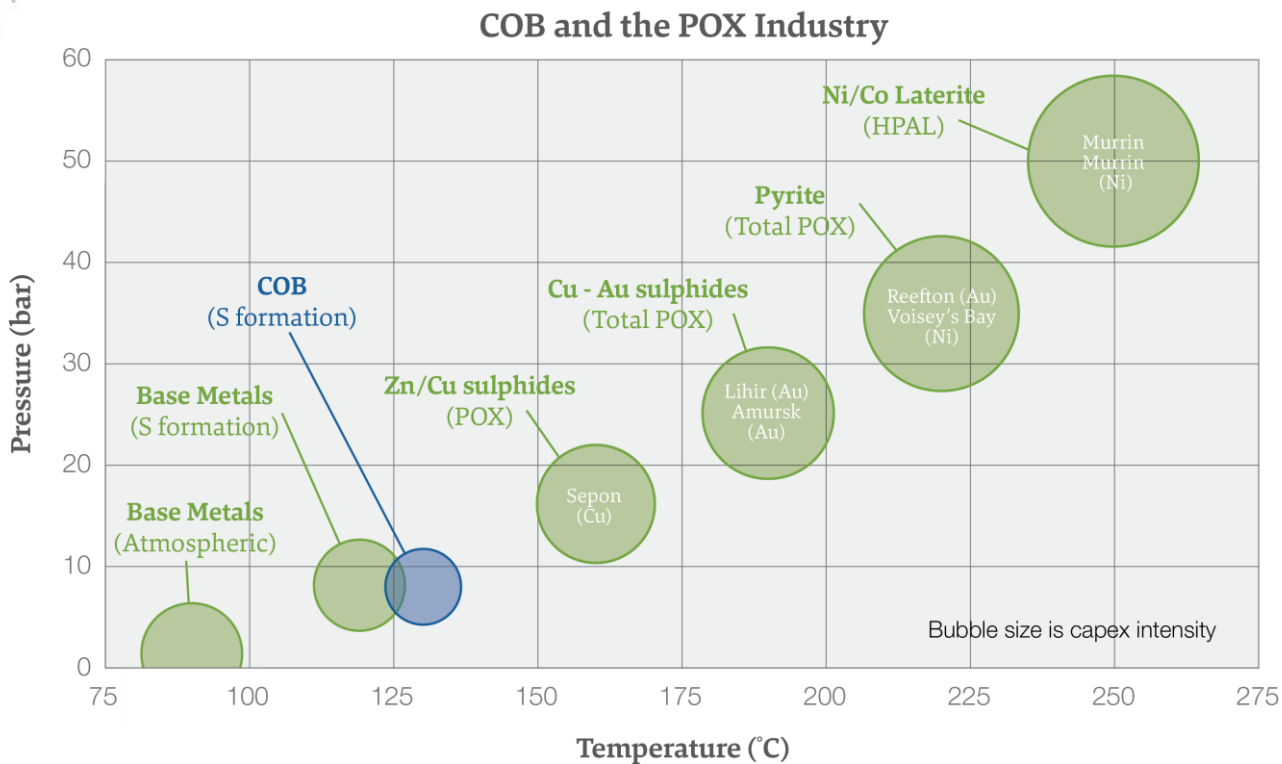
Thackaringa – Comparison with ASX peers



Source: Cobalt Blue Holdings

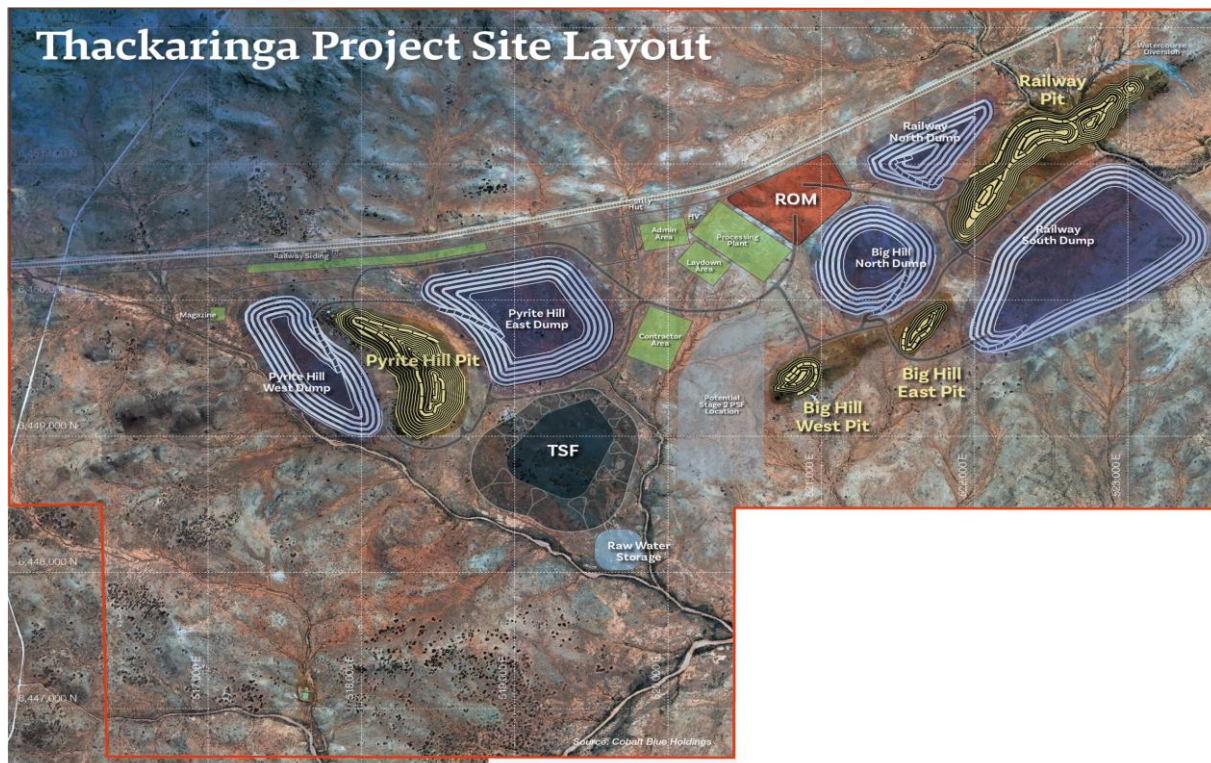
Note: Revenue stream figures are based solely upon head grades converted in revenues at spot prices.

COB – Position in POX Industry



Source: Cobalt Blue Holdings Ltd

Thackaringa – Site Layout

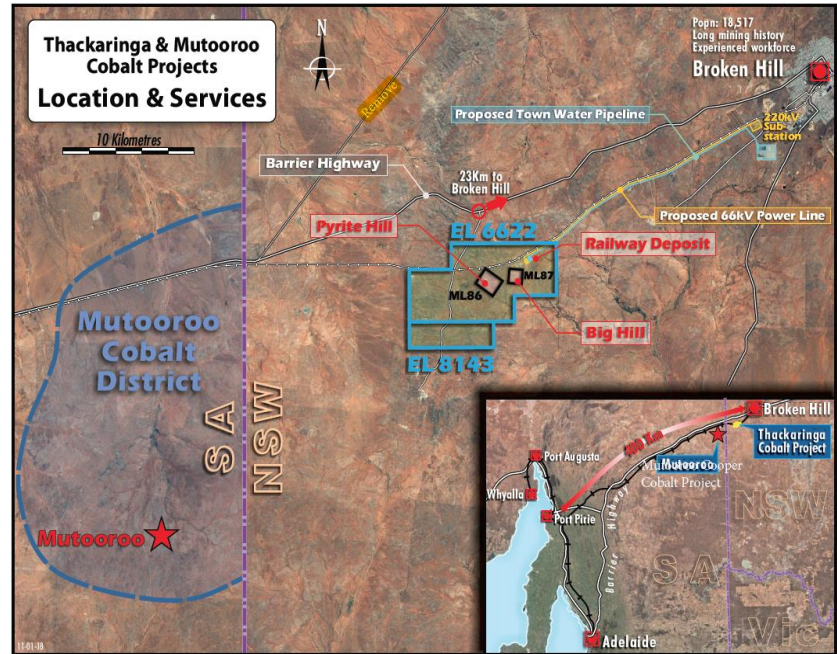


Source: Cobalt Blue Holdings Ltd

Cobalt Blue = Thackaringa + Process

COB takes first step in process rollout

- ✓ Cobalt Blue - beyond Thackaringa
- ✓ Cooperation with Havilah Resources
- ✓ Potential cobalt district in Broken Hill



Source: Havilah Resources & Cobalt Blue Holdings



Disclaimer

The information contained in this confidential document ("Presentation") has been prepared by Cobalt Blue Holdings (the "Company"). It has not been fully verified and is subject to material updating, revision and further amendment.

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COMPETENT PERSONS STATEMENT

The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources and Ore Reserves is based on information compiled by Mr Peter Buckley, a Competent Person who is a Member of The Australian Institute of Geoscientists (MAIG). Mr Buckley is employed by (Left Field Geoscience Services) and engaged by Cobalt Blue Holdings on a consulting basis. Mr Buckley 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 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Buckley consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The revised Mineral Resource was independently prepared by SRK Consulting using a Co-Kriging ('CK') method of estimation, suitable for the style of mineralisation. Mr Danny Kentwell, Principal Consultant (Resource Evaluation) at SRK Consulting, was engaged to estimate the Mineral Resource as the independent Competent Person. The Mineral Resource has been estimated and reported in accordance with the guidelines of the 2012 edition of the Australasian Code for the Reporting of Exploration Results, Minerals Resources and Ore Reserves ('2012 JORC Code').

The information in this report that relates to Metallurgical Testwork Results or Engineering Design Studies is based on, and fairly represents, information and supporting documentation prepared 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 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. 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.



Disclaimer

Slide 10 & 11: The Mineral Resource estimates are as released on 19 March 2018 ('Thackaringa – Significant Mineral Resource upgrade'). COB confirms it is not aware of any new information or data that materially affects the information included in the original market announcement, and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

Slide 12: The Ore Reserve estimate and production target is as released on 4 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 that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

Slide 14 & 15: The exploration results are as released on 27 March 2017 ('Assays Confirm Thackaringa as a Significant Cobalt-Pyrite Project').

Slide 16, 17, 20 & 22: The Preliminary Feasibility Study results and forecast financial information is as released on 4 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 that all material assumptions and technical parameters underpinning the estimates, production targets and forecast financial information in the relevant market announcement continue to apply and have not materially changed.

Slide 18: The Mineral Resource estimates and related grade tonnage information is as released on 19 March 2018 ('Thackaringa – Significant Mineral Resource upgrade'). COB confirms it is not aware of any new information or data that materially affects the information included in the original market announcement, and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

Slide 19: The exploration results are as released on 22 November 2017 ('Multiple large exploration targets identified at Thackaringa Cobalt Project').

Slide 24: The metallurgical results are as released on 26 October 2017 ('Bulk Metallurgical Testwork – Strong Concentration Results').

Slide 25: The metallurgical results are as released on 5 March 2018 ('PFS – Calcine and Leach Testwork Complete – Strong Results').