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Q1 2018

# Investor Presentation

**COB : ASX**



# Cobalt – our increasing dependency

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## Consumer Electronics

### SMART PHONE

Size = 5.5 Wh

**Cobalt: 6grams**  
(\*A\$0.50)



### TABLET

Size = 20 Wh

**Cobalt 23 grams**  
(\*A\$1.90)



## Cobalt Oxides

### LAPTOP

Size = 30 Wh

**Cobalt 33 grams**  
(\*A\$2.60)



## Technology Disruption

### FIXED STORAGE

Size = 7 kWh

**Cobalt: 3 kgs**  
(\*A\$240)



## Cobalt Sulphates

### BATTERY ELECTRIC VEHICLE

Size = 85 kWh

**Cobalt 15 kgs**  
(\*A\$1,200)



### WIDE BODY AIRCRAFT

A380 shown (4 engine)

**Cobalt: 4,500 kgs**  
(\*A\$360,000)



## Evolution of Superalloys

**1958:**  
**BOEING 707**

**Cobalt: 15 kgs**  
(\*A\$1,200)



**1994:**  
**BOEING 747**  
10x cobalt for  
<4x weight B707

**Cobalt: 650kg**  
(\*A\$50,000)



**2006:**  
**Airbus A380**

20x cobalt for  
<6x weight B707

**Cobalt: 4,500kgs**  
(\*A\$360,000)

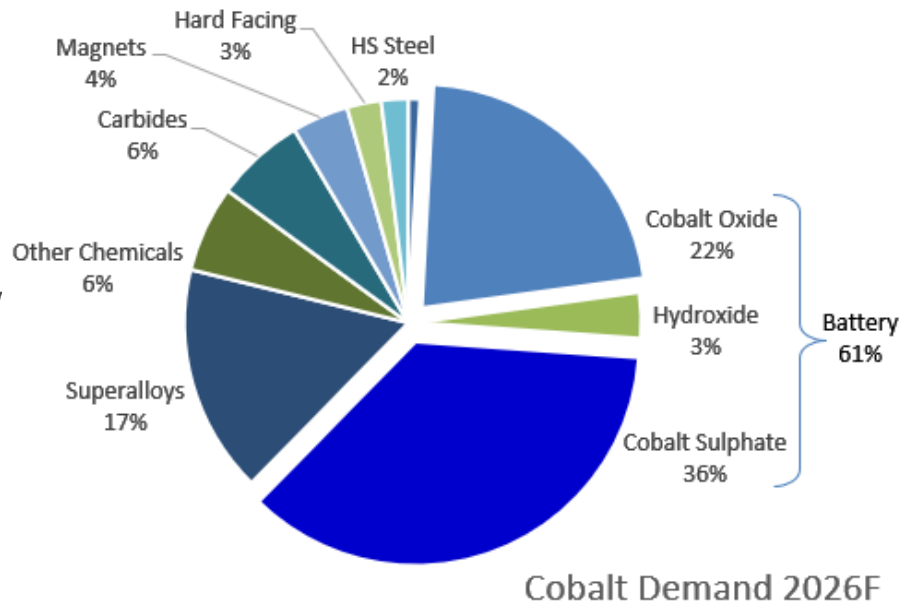
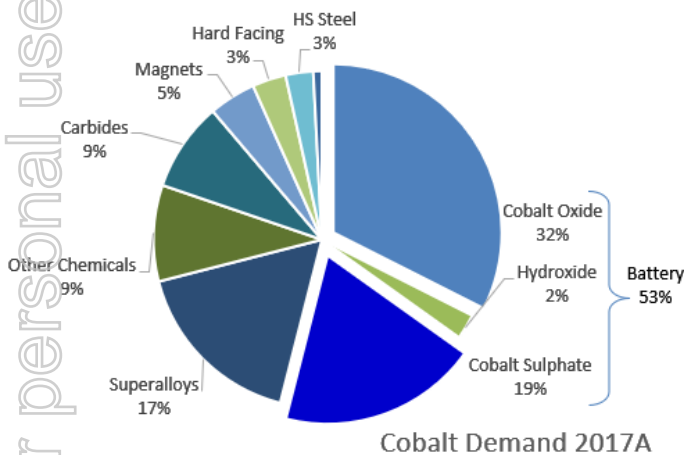


\* LME Cobalt Spot Price – February 2018

# Cobalt Demand +70% next decade

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

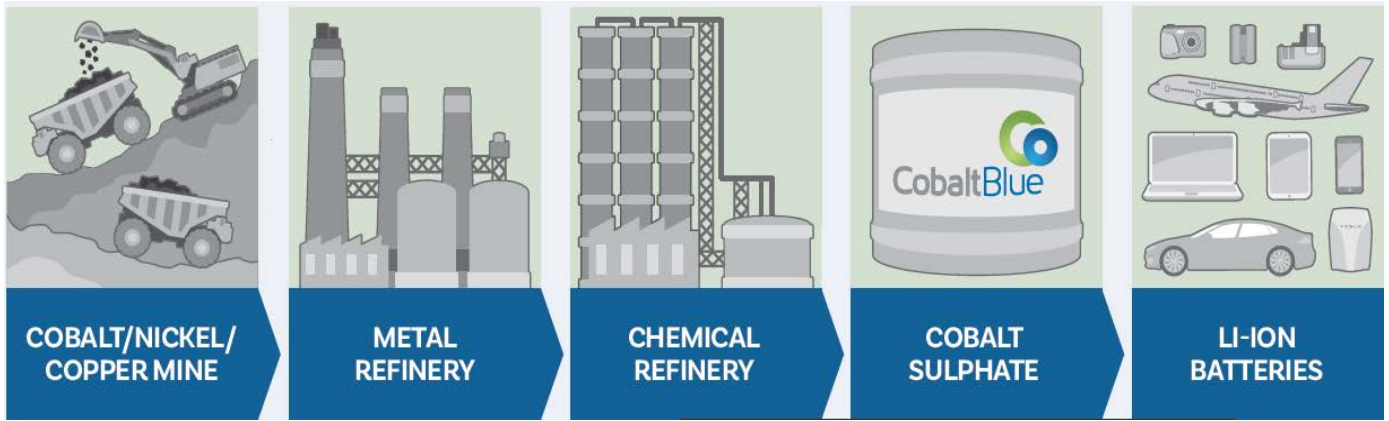
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Source: CRU, Cobalt Blue Holdings Ltd

# Thackaringa – mine to battery strategy

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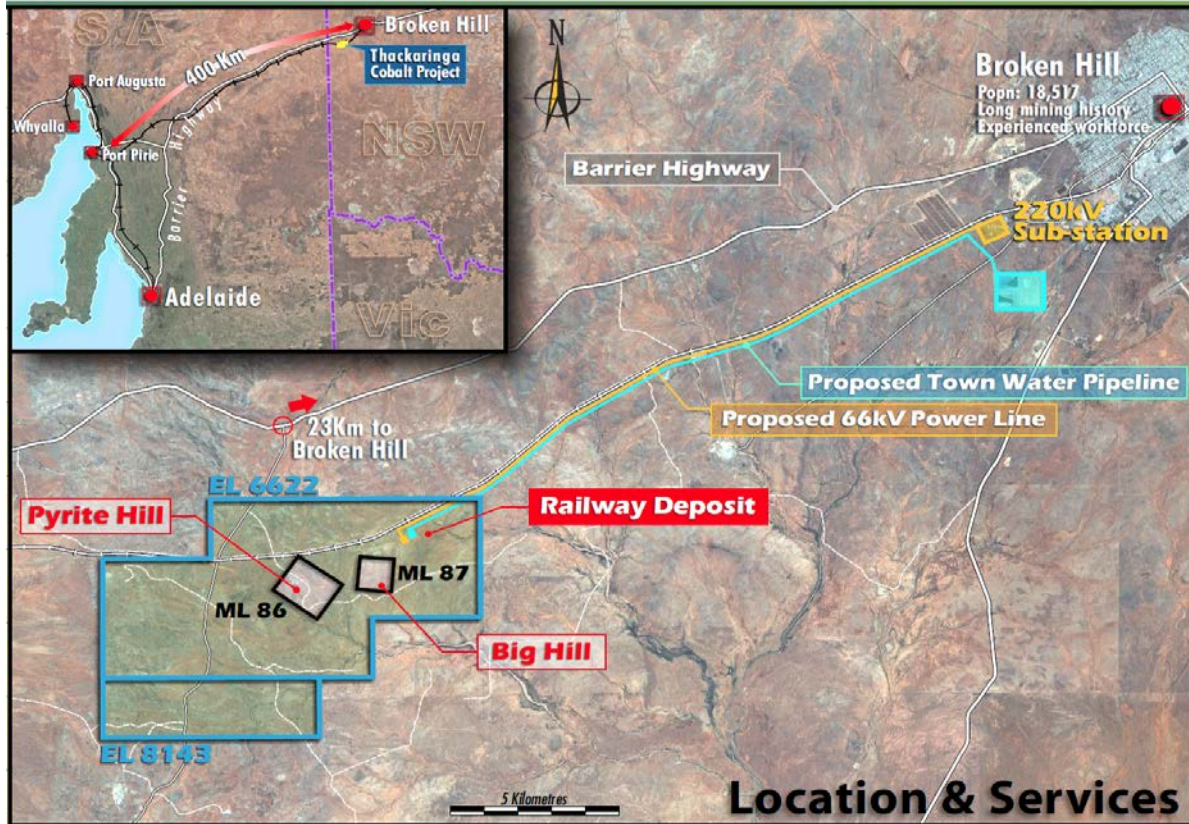
Co ~25-35% payable  
Traditional Cobalt Model

Co ~105% payable  
**Cobalt Blue Model**

Source: Cobalt Blue Holdings Ltd

# Thackaringa – People, Power, Water, Road, Rail

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Source: Cobalt Blue Holdings

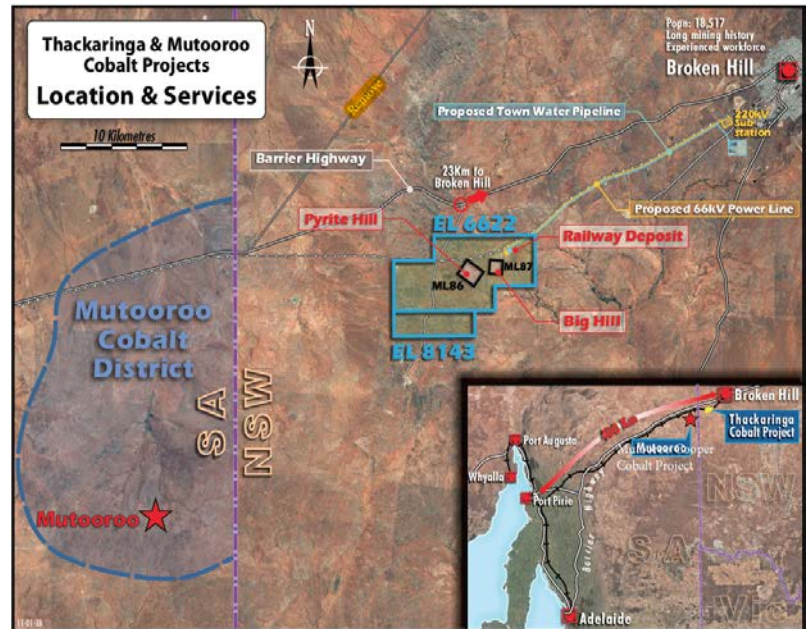
# \$ Cobalt Blue = Thackaringa + COB Process

## 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

# The Cobalt Blue Management Team

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



## Independent Chairman – Robert Biancardi

- IBM, Citibank, Westpac and Evolution Healthcare senior management and Director
- Numerous directorships of private companies including Rockridge Private Equity, Hutchisons Child Care (successful ASX listing)
- Board Member of the Heart Foundation of Australia, Diabetes Association and the “Bread & Butter” Project

## 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

## Director – Anthony “Trangie” Johnston

- Geologist with 20 years experience in exploration, project development and mining activities
- Career spans the private, public, consulting and government sectors, with experience both throughout Australia and internationally
- CEO of Broken Hill Prospecting, a diversified minerals sands developer

## Independent Director – Hugh Keller

- Partner Blake Dawson (now Ashurst) and its predecessor firms until retirement from full time legal practice in 2010.
- Non-executive director of ASX listed Thakral Holdings Ltd and of LJ Hooker Ltd and in both companies was a member of the Audit Committee; Chairman of a large private investment company with over \$150m of net assets.

## Independent Director – Matt Hill

- CEO ASX/NZX New Talisman Gold Mines Limited responsible for bringing NZ’s Highest grade underground gold mine into development
- Corporate advisor with over 20 years experience in Venture Capital/Private Equity, specialising in resource companies and capital markets.

# COB – World Class Integrated Cobalt Refinery

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- ✓ Top 5 global cobalt supplier – 20,000tpa cobalt sulphate with >20 year life
- ✓ Thackaringa - natural advantage - cobalt + sulphur
- ✓ COB - only primary cobalt play listed on ASX
- ✓ Australia - safe and secure jurisdiction

## Share Catalysts:

- ✓ 1 month – First cobalt sulphate samples shipped
- ✓ 1 month – Tighter Resource Definition
- ✓ 4 months - Pre Feasibility Study - introduce Thackaringa as a world class asset
- ✓ 16 months – Bankable Feasibility Study

**COBALT BLUE ASPIRES TO BE A TOP 5 GLOBAL PRODUCER**



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# Appendix



# Cobalt Blue Achievements

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1. IPO February 2017
2. Scoping Study January - June 2017 showed positive project potential (not released to market)
  - ✓ Drilled 22 diamond holes, and 38 RC holes for 12,000 m
  - ✓ Upgraded resource to 54.9Mt at 900 ppm Cobalt = 50,000 t Co
3. Commenced Pre-Feasibility Study August 2017 – due June 2018
  - ❑ Drilling 13,000 m
  - ❑ Upgraded resource due Q1 2018
  - ❑ Metallurgical testwork demonstrating high cobalt recoveries

# “CY18 - another big year for Cobalt Blue”

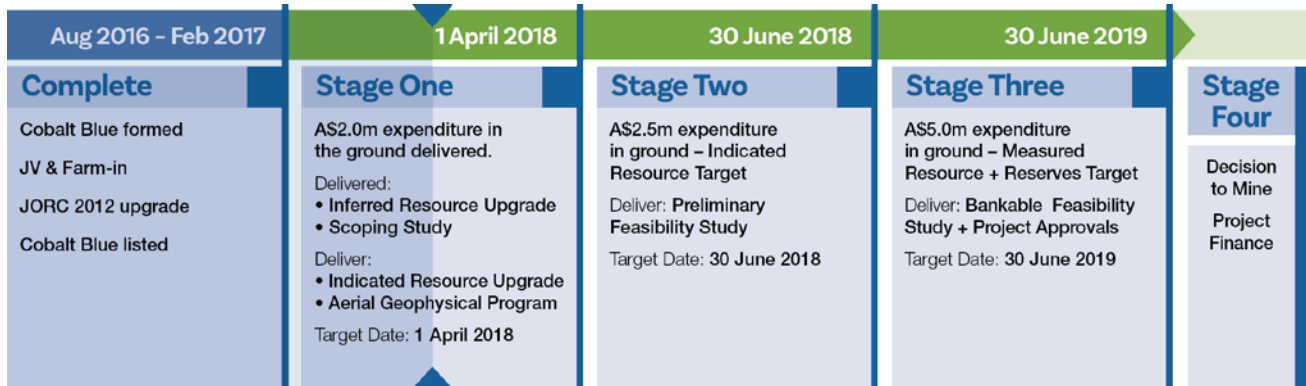
>13,000m of drilling targeted for CY18

= One of the largest cobalt exploration commitments on the ASX

**ASPIRATIONAL TARGET:** Significant improvement in size of the Thackaringa cobalt deposit

= A global top 5 mining operation with 20 year + life

**OUR SCHEDULE OF WORK IS AS FOLLOWS:**

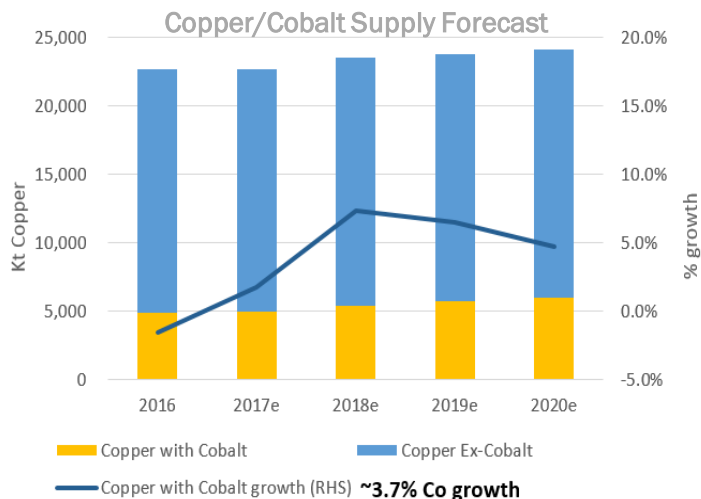
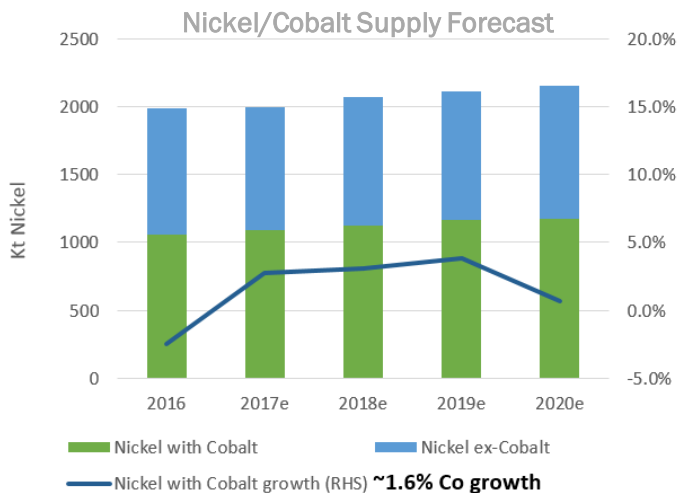
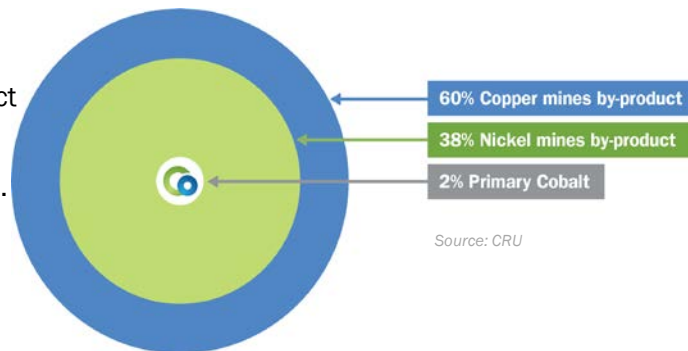


Source: Cobalt Blue Holdings

# Cobalt – less growth

## Cobalt supply constrained

- Cobalt supply growth in copper/nickel by-product will average 3-4% to 2020.
- Cobalt demand growth will average 9% to 2020.
- Forecast cobalt shortage of 10-20Kt by 2020.
- Cobalt Blue tonnes are required for market balance in the longer term.



# Cobalt – the new energy revolution

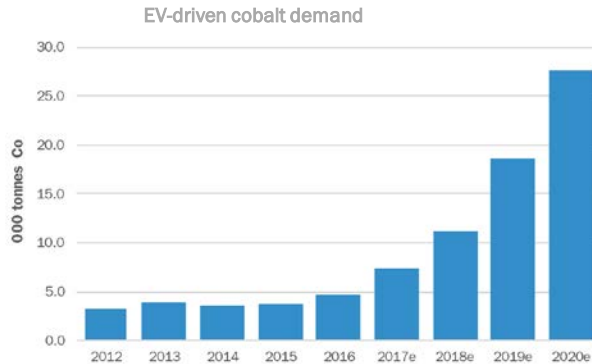
The New Energy sector is disruptive, rapidly evolving, and delivering returns

## INCREASINGLY INVESTABLE:

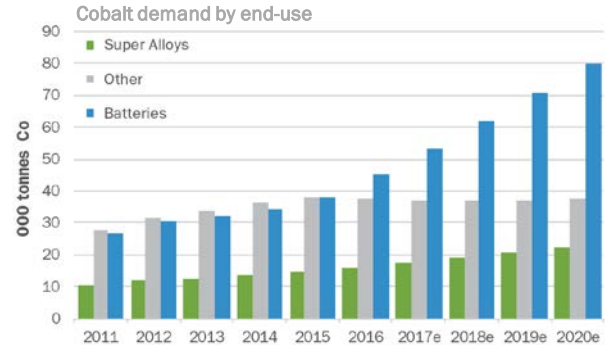
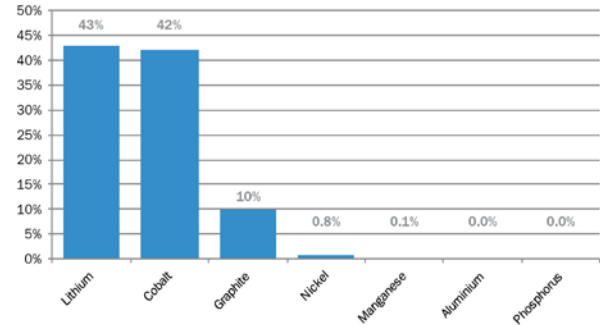
- Cyclical winners and losers as the sector progresses.

## RAW MATERIALS:

- Cobalt is a vital component in rechargeable batteries
- EV penetration rate of 1% by 2020 increases auto battery cobalt demand by 44% CAGR

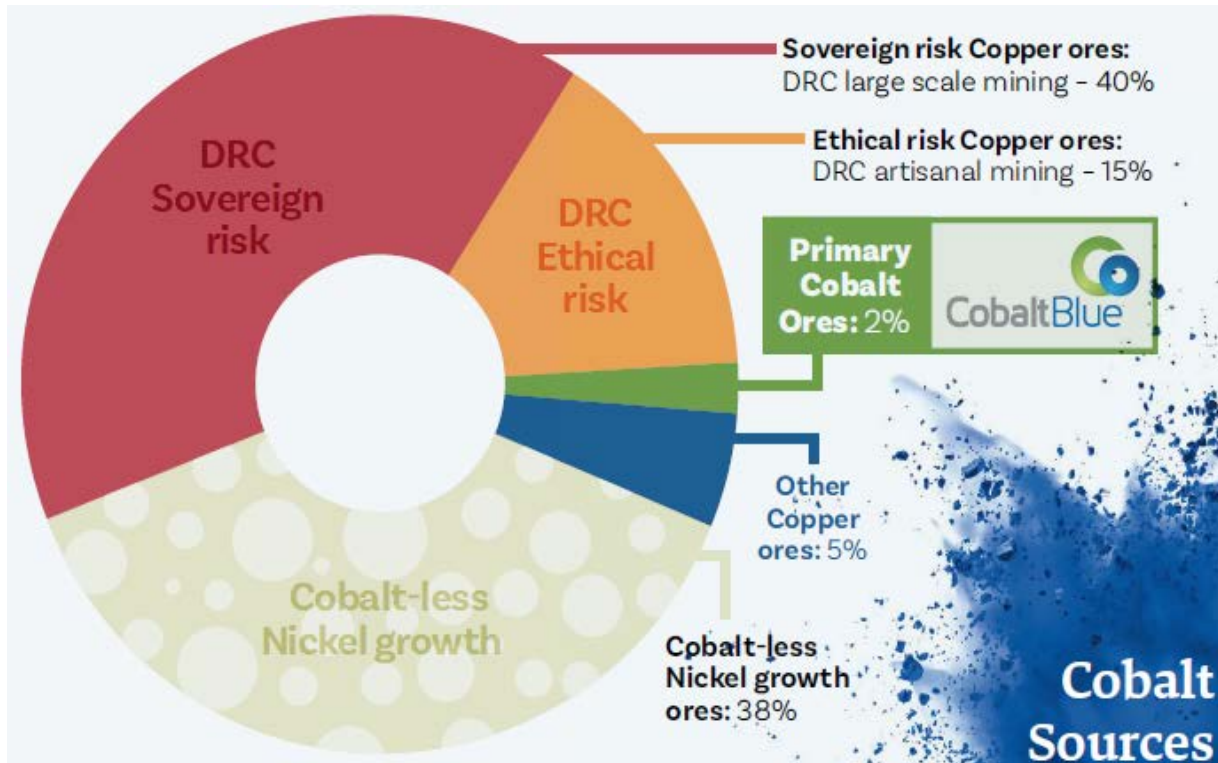


Share of raw materials' end-use in batteries, 2015



Source: CDI, USGS, company data, Hillcrest Consulting research estimates

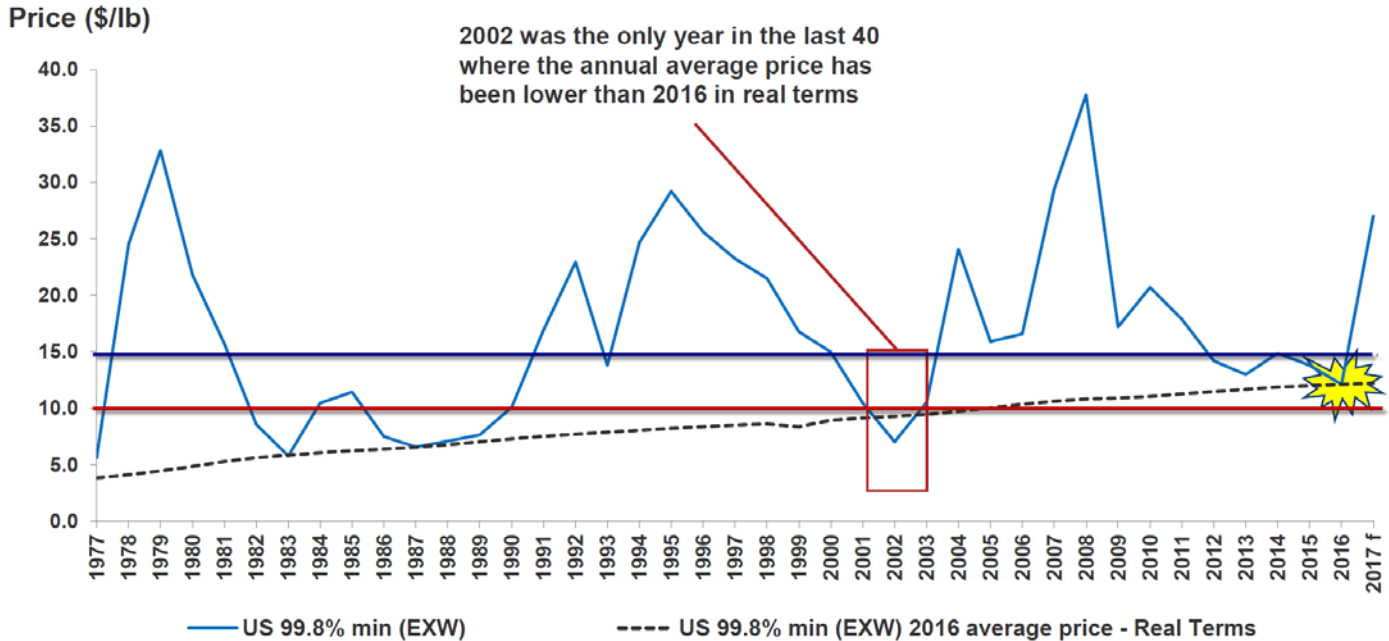
# Cobalt Market - Supply Side at Risk



Source: CRU & Cobalt Blue Holdings

# Thackaringa – Historical cobalt pricing

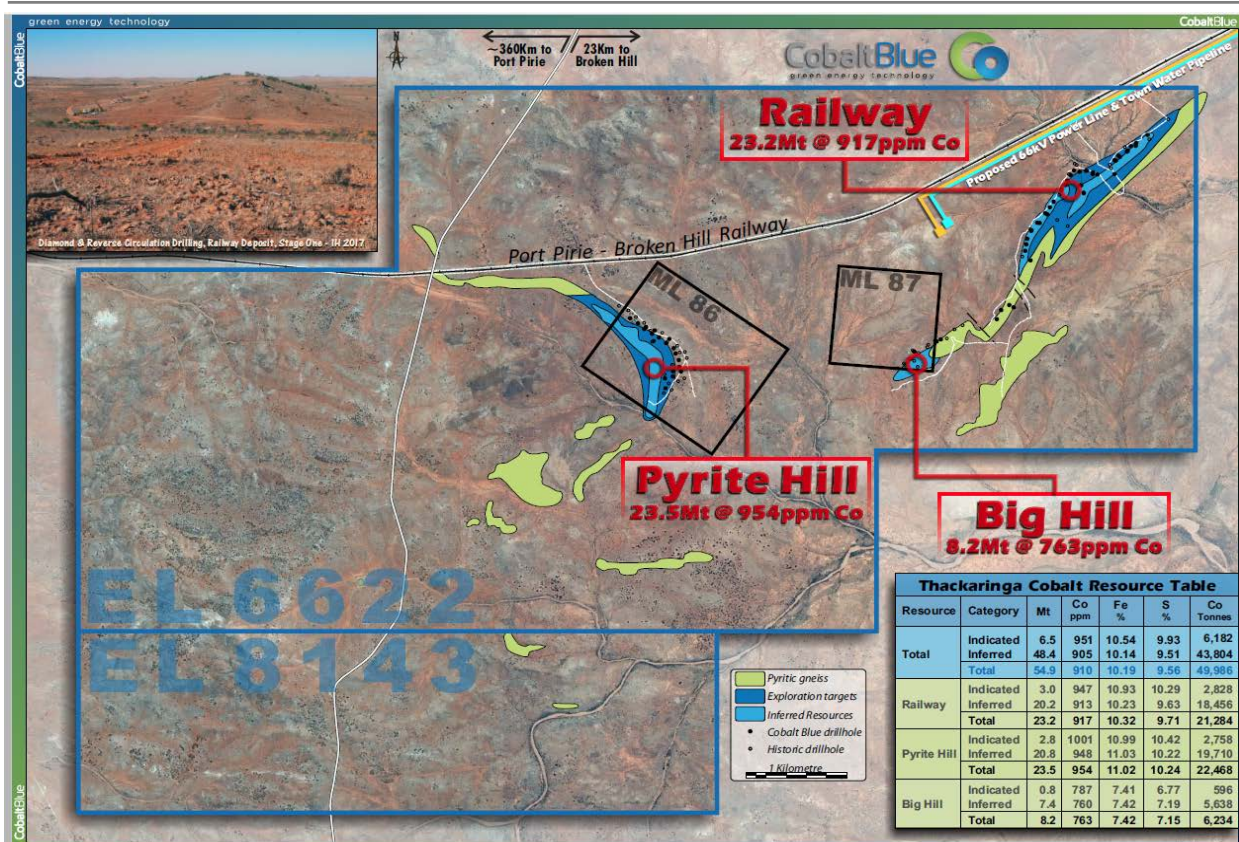
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Source: CRU & Cobalt Blue Holdings Ltd

# Thackaringa – Site Layout

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Source: Cobalt Blue Holdings



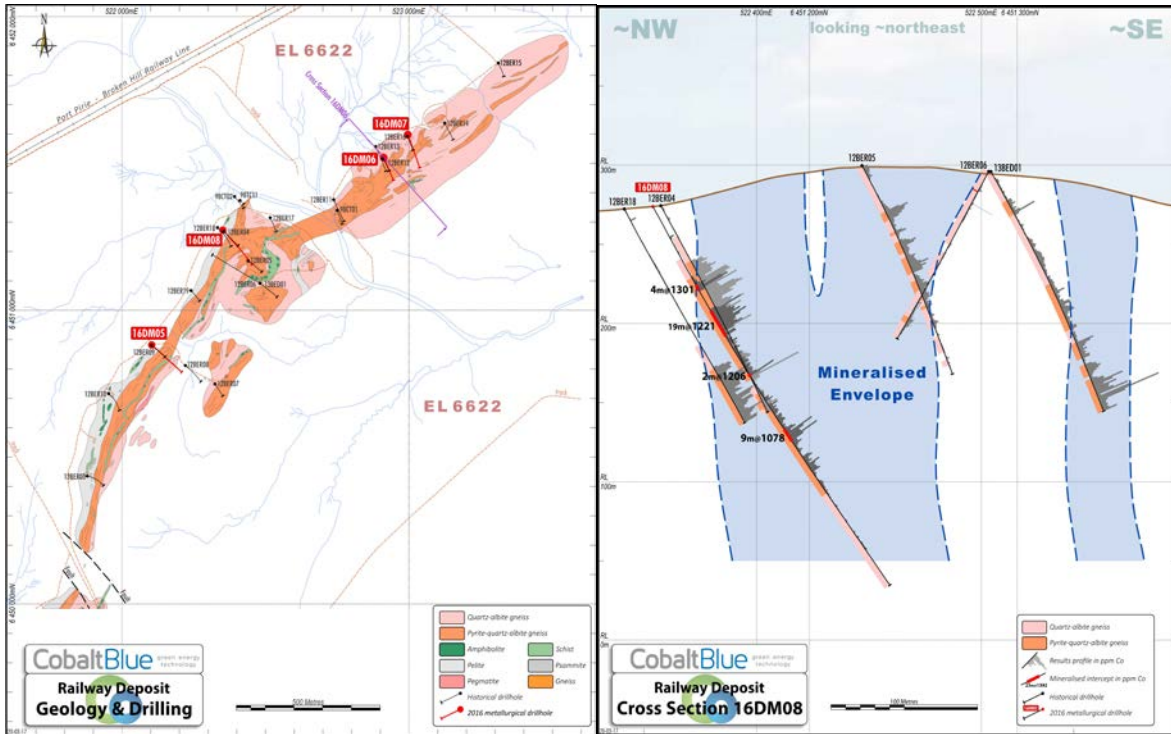
# Thackaringa – significant defined resources

Category	Mt	Co ppm	Fe %	S %	Pyrite %	Co Tonnes	Py Mt	Density
<b>Pyrite Hill (at a 500ppm Co cut-off)</b>								
Indicated	2.8	1001	10.99	10.42	19.54	2,758	0.54	2.87
Inferred	20.8	948	11.03	10.22	19.16	19,710	3.98	2.87
<b>Total</b>	<b>23.5</b>	<b>954</b>	<b>11.02</b>	<b>10.24</b>	<b>19.21</b>	<b>22,468</b>	<b>4.52</b>	<b>2.87</b>
<b>Big Hill (at a 500ppm Co cut-off)</b>								
Indicated	0.8	787	7.41	6.77	12.7	596	0.1	2.76
Inferred	7.4	760	7.42	7.19	13.49	5,638	1	2.78
<b>Total</b>	<b>8.2</b>	<b>763</b>	<b>7.42</b>	<b>7.15</b>	<b>13.41</b>	<b>6,234</b>	<b>1.1</b>	<b>2.78</b>
<b>Railway (at a 500ppm Co cut-off)</b>								
Indicated	3	947	10.93	10.29	19.29	2,828	0.58	2.87
Inferred	20.2	913	10.23	9.63	18.05	18,456	3.65	2.85
<b>Total</b>	<b>23.2</b>	<b>917</b>	<b>10.32</b>	<b>9.71</b>	<b>18.21</b>	<b>21,284</b>	<b>4.22</b>	<b>2.85</b>
<b>Total (at a 500ppm Co cut-off)</b>								
Indicated	6.5	951	10.54	9.93	18.63	6,182	1.21	2.86
Inferred	48.4	905	10.14	9.51	17.83	43,804	8.63	2.85
<b>Total</b>	<b>54.9</b>	<b>910</b>	<b>10.19</b>	<b>9.56</b>	<b>17.92</b>	<b>49,986</b>	<b>9.84</b>	<b>2.85</b>

Source: Cobalt Blue Holdings

# Thackaringa – Railway Deposit

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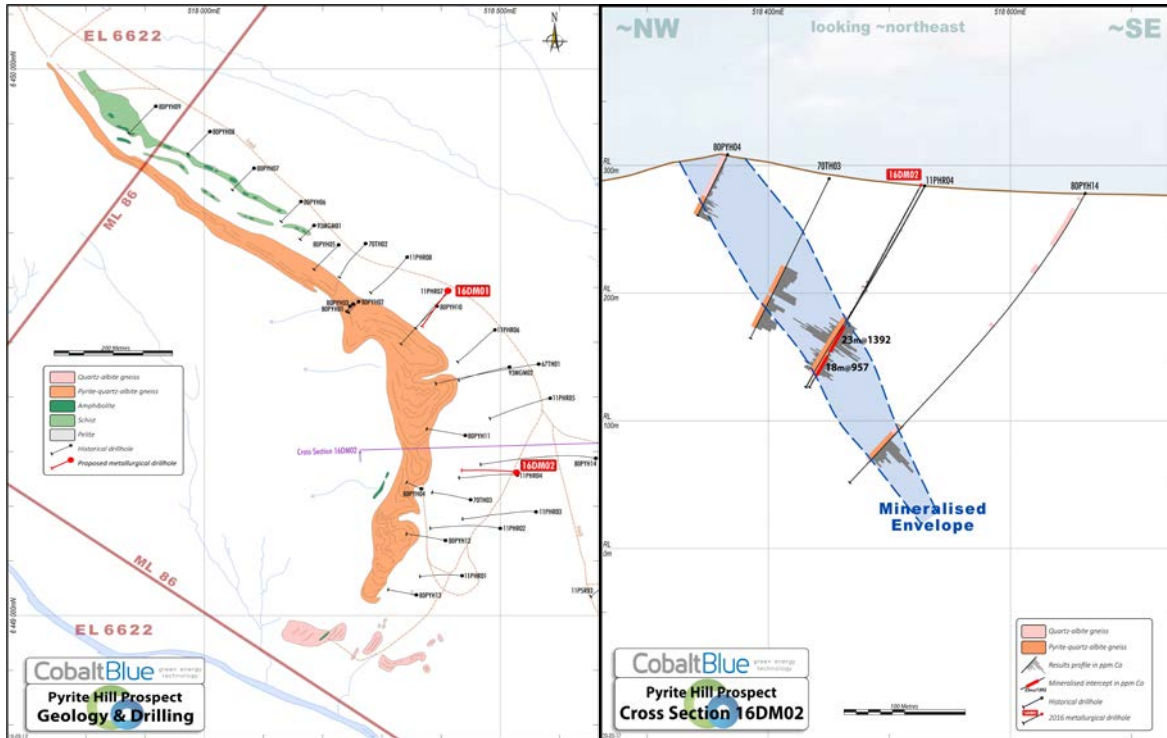


Railway Deposit

Source: Cobalt Blue Holdings

# Thackaringa - Pyrite Hill Deposit

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Pyrite Hill Deposit

Source: Cobalt Blue Holdings

# Thackaringa - processing summary



**Mine**  
 ROM 800–1200ppm Co  
 Co inside FeS<sub>2</sub> mineral

**Concentrate**  
 Crush, grind, gravity, float  
 Cons = 0.4–0.5% Co  
 90–95% recovery  
 ~150–200 microns

**Process**  
 Pyro-hydro met  
 95–98% Co recovery  
 90% S recovery  
 90% Fe recovery

**Product**  
 CoSO<sub>4</sub>·7H<sub>2</sub>O  
 Cobalt Sulphate crystals  
 Elemental Sulphur  
 Iron Oxide (Fe<sub>2</sub>O<sub>3</sub>)

**LOW STRIP RATIO**

**OPEN-CUT MINING**

**1-2 KM TO PROCESSING PLANT**

**GRAVITY AND FLOTATION SORTING**  
 (~80% waste removed)

**PROCESS PLANT**

**CoSO<sub>4</sub>·7H<sub>2</sub>O**  
**Sulphur**  
**Fe<sub>2</sub>O<sub>3</sub>**

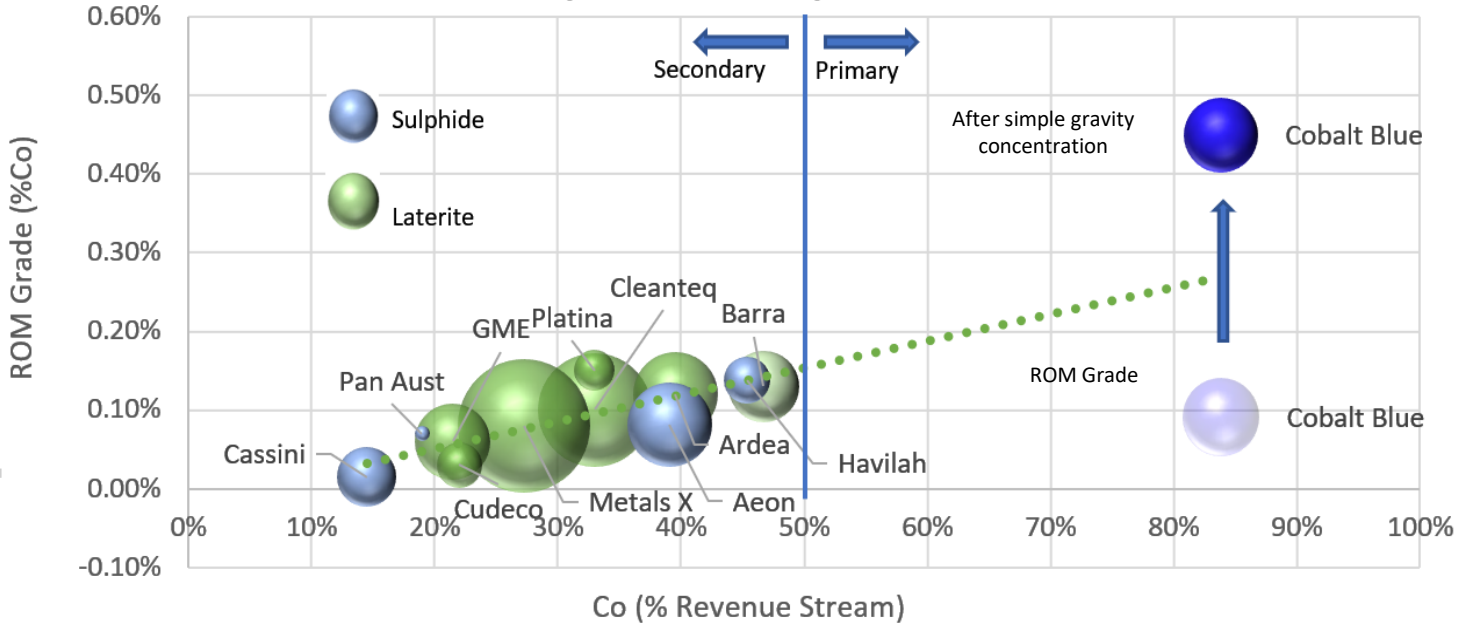
Source: June 2017 Scoping Study – Cobalt Blue Holdings

*Minimum target payment terms: 100% LME cobalt pricing*  
*High-grade cobalt sulphate crystals possible for 5-10% premium margin*

# Thackaringa – Comparison with ASX peers

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Cobalt - Primary & Secondary (Explorers/Developers)



Source: Cobalt Blue Holdings Ltd

# 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

MINE

CONCENTRATE

CALCINE

LEACH

PRODUCT RECOVERY

100 kg of concentrate produced in November is being treated through the calcine and leach unit operations.

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 ranging from ~70% to 96%. The leach parameters are still being optimised



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

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## **COMPETENT PERSONS STATEMENT**

The information in this report that relates to exploration results, Mineral Resources and Targets is based on information compiled by Mr Anthony Johnston, BSc (Hons), who is a Member of the Australian Institute of Mining and Metallurgy and who is a non-executive director of Cobalt Blue Holdings Limited and the Chief Executive Officer of Broken Hill Prospecting Limited. Mr Johnston has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 & 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Johnston consents to the inclusion in the announcement of the matters based on his information in the form and context that the information appears