

COLLERINA COBALT LTD (ASX:CLL)

MINING THE METALS OF  
**THE FUTURE**



# 01 Disclaimer



This presentation has been prepared by Collerina Cobalt Limited (ABN 79 106 879 690) (“CLL” or the “Company”). It should not be considered as an offer or invitation to subscribe for or purchase any securities in the Company or as an inducement to make an offer or invitation with respect to those securities. No agreement to subscribe for securities in the Company will be entered into on the basis of this presentation.

This presentation contains forecasts and forward looking information. Such forecasts and information are not a guarantee of future performance, involve unknown risks and uncertainties. Actual results and developments will almost certainly differ materially from those expressed or implied. Collerina Cobalt has not audited or investigated the accuracy or completeness of the information, statements and opinions contained in this presentation. Accordingly, to the maximum extent permitted by applicable laws, Collerina Cobalt makes no representation and can give no assurance, guarantee or warranty, express or implied, as to, and take no responsibility and assume no liability for, the authenticity, validity, accuracy, suitability or completeness of, or any errors in or omission, from any information, statement or opinion contained in this presentation.

You should not act or refrain from acting in reliance on this presentation material. This overview of Collerina Cobalt does not purport to be all inclusive or to contain all information which its recipients may require in order to make an informed assessment of the Company’s prospects. You should conduct your own investigation and perform your own analysis in order to satisfy yourself as to the accuracy and completeness of the information, statements and opinions contained in this presentation and making any investment decision.

# 02 Investment Highlights



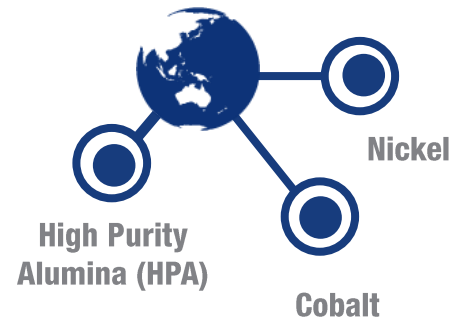
**A unique HPA-nickel-cobalt project favourably located in one of Australia's most prolific mining jurisdictions**

Proximal to CleanTeq's Sunrise and Australian Mines' Flemington projects



**Proprietary processing technology capable of delivering strong economics**

Exclusive IP applied to established processing technologies of CCAL & Solvent extraction



**Multiple high-value products with strong demand fundamentals that are at the forefront of the world's technology revolution**

CLL's intended HPA and nickel/cobalt products are the feedstock for the devices, applications and vehicles of the future



**Project economics befitting a junior miner**

Anticipated modest capex, high margins, rapid payback



**Highly experienced Board and management team with a track record in exploration success & project development**

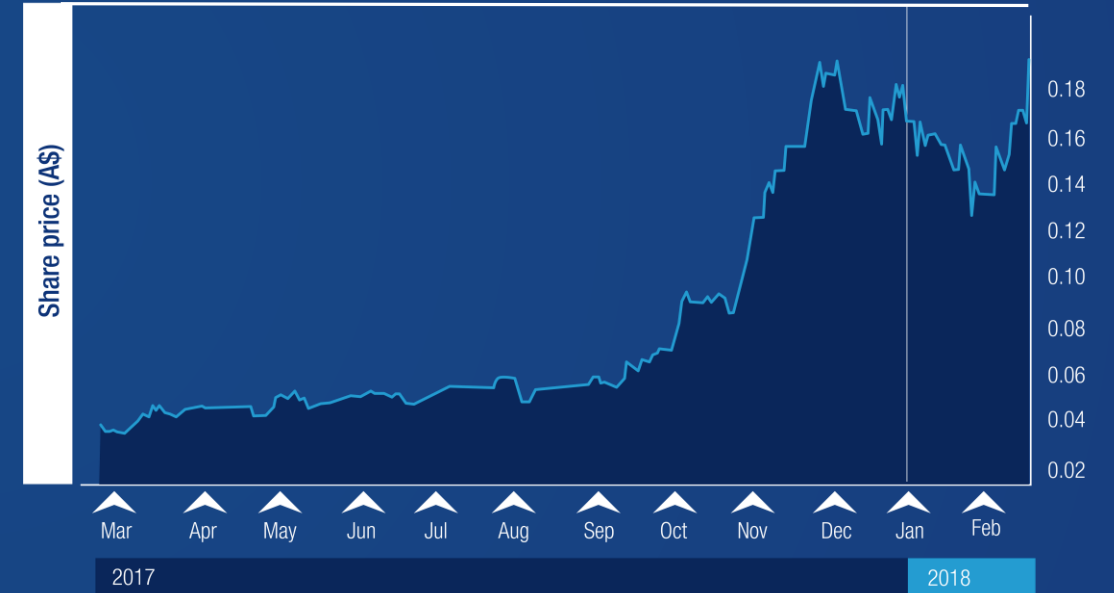
Seasoned judgement and prudent financial management to underpin project advancement

# 02 Corporate snapshot

## TRADING INFORMATION

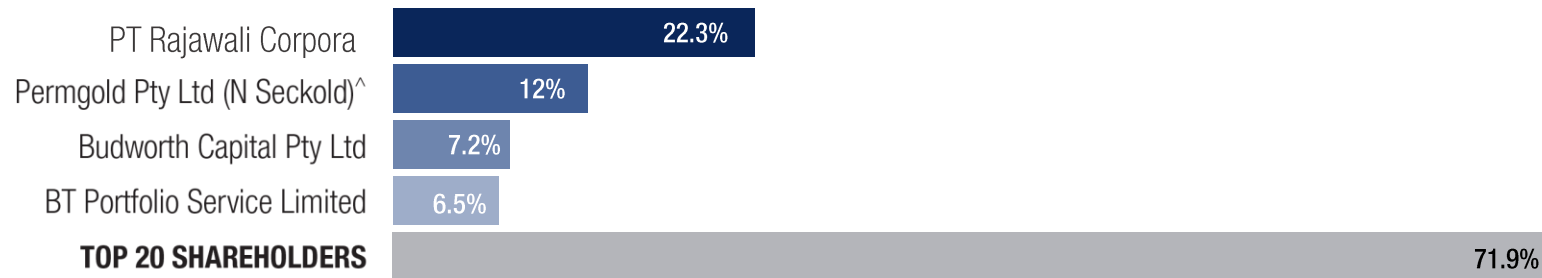
|                                   |                                 |
|-----------------------------------|---------------------------------|
| ASX CODE                          | CLL                             |
| Share Price (1-Mar-18)            | 15.5c                           |
| 52 week trading range             | 1.0c – 18.0c                    |
| Issued Shares                     | 508.3M                          |
| Unlisted options (@2c)            | 8.0M (expiring 21 October 2018) |
| Unlisted Options (@10c)           | 30.0M (expiry 31 October 2019)  |
| <b>Market Cap (fully diluted)</b> | <b>\$84.6M</b>                  |
| Cash (1-Mar-18)                   | \$1.8M                          |
| <b>Enterprise Value</b>           | <b>\$82.8M</b>                  |

## SHARE PRICE PERFORMANCE



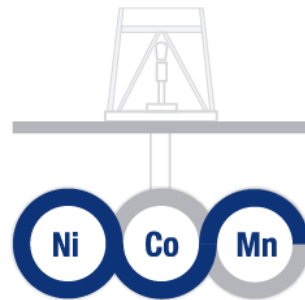
# 02 Corporate snapshot

## SUBSTANTIAL SHAREHOLDERS



## RECENT HIGHLIGHTS

2017



**Successful Solvent Extraction of Ni, Co & Mn**



**Successful Recovery of Scandium**

**99.99% HPA**

**4N (99.99%) Purity Achieved in HPA Testwork Program**



**Successful Production of High Purity Alumina (HPA) sample**



**\$3.5M Share Placement (Nov 2017)**

# 03 Board & Management



**Norman Seckold**  
Chairman

30+ years in the full time management of natural resource companies. Past Chairman and Director of listed companies including Bolnisi Gold NL, Timberline Minerals Inc., Perseverance Corporation Limited, Valdora Minerals NL, Palmarejo Silver and Gold Corp. and Cockatoo Coal Limited. Currently Chairman of Santana Minerals Limited and Planet Gas Limited and unlisted public company Nickel Mines Limited.



**Justin Werner**  
Managing Director

20+ years' mining experience as a resource company consultant and developer. Founding partner of PT Gemala Borneo Utama (BUDUK Gold Project and Romang Island Project). Romang Island was successfully sold to Robust Resources Limited. Currently Managing Director of unlisted public company Nickel Mines Limited.



**Peter Nightingale**  
Director and CFO

20+ years as a Director or Company Secretary for a range of resource companies including Pangea Resources Limited, Timberline Minerals Inc., Perseverance Corporation Limited, Valdora Minerals NL, Mogul Mining NL, Bolnisi Gold NL, Cockatoo Coal Limited and Sumatra Copper and Gold plc. Currently a Director Planet Gas Limited and unlisted public companies Nickel Mines Limited and Prospech Limited.



**Rimas Kairaitis**  
Technical Director

20+ years experience in minerals exploration and resource development in gold, base metals and industrial minerals. Led the geological field teams to the discovery of the Tomingley and McPhillamy's gold deposits in NSW and steered the Hera gold-lead-zinc Project from discovery through to successful commissioning and commercial production. Previously founding Managing Director and CEO of ASX-listed Aurelia Metals.



**Tony Sgro**  
Non-Executive Director

Chemical Engineer with 45+ years' senior management experience in the supply of specialised equipment to the process industries with an emphasis on mining and oil & gas.

Co-founder, Director and General Manager of Kelair Pumps for 36 years.



# 04 Collerina Project



- **The Collerina Project area (EL 6336 & ELA 5506) covers ~224km<sup>2</sup>**
- **Drilling has defined discrete zones of high grade Co up to 0.70% Co over 4m including 1.02% Co over 2m**
- **Mineralisation lies between surface and ~60m. Deposit remains open at depth and along strike**
- **Unique serpentinite geology** provides the amenability to low Capex, Counter-Current Atmospheric Leach (CCAL) process and the extraction of high-value HPA and Ni-Co precursors via exclusively licensed proprietary flowsheet processes

The Homeville deposit has a current Mineral Resource of:

- **16.3 million tonnes at 3.1% aluminium, 0.93% nickel and 0.05% cobalt for 505,300 tonnes of aluminium, 151,000 tonnes of nickel and 8,100 tonnes of cobalt (cut-off 0.7% nickel)**
- **Exploration program targeting additional high-cobalt targets commencing March 18 quarter**

| JORC Category | Cut-off Grade Ni% | Tonnes (Mt) | Ni%  | Co%  | Fe% | Al% |
|---------------|-------------------|-------------|------|------|-----|-----|
| Indicated     | 0.5               | 6.4         | 0.87 | 0.06 | 21  | 3.7 |
|               | 0.7               | 4.4         | 0.99 | 0.06 | 20  | 3.4 |
|               | 1                 | 1.8         | 1.21 | 0.05 | 19  | 3   |
| Inferred      | 0.5               | 20.7        | 0.78 | 0.05 | 18  | 3   |
|               | 0.7               | 11.9        | 0.91 | 0.05 | 18  | 3   |
|               | 1                 | 3.1         | 1.16 | 0.05 | 17  | 2.7 |
| TOTAL         | 0.5               | 27.2        | 0.8  | 0.05 | 19  | 3.2 |
|               | 0.7               | 16.3        | 0.93 | 0.05 | 19  | 3.1 |
|               | 1                 | 4.9         | 1.18 | 0.05 | 18  | 2.8 |

# 04 Collerina Project



0 Kilometres 200



Located in Australia's  
tech metals basin

## A Premier Address

Copper, zinc, gold, silver and scandium projects/mines including NorthParkes (Cu-Au) and Cadia (Cu-Au).

Established mining district with highly experienced workforce.

Project located between Cobar and Dubbo, 130km NW of CleanTeq's Sunrise Project (Ni-Co-Sc) (formerly Syerston).

Close to rail, road and grid power infrastructure.





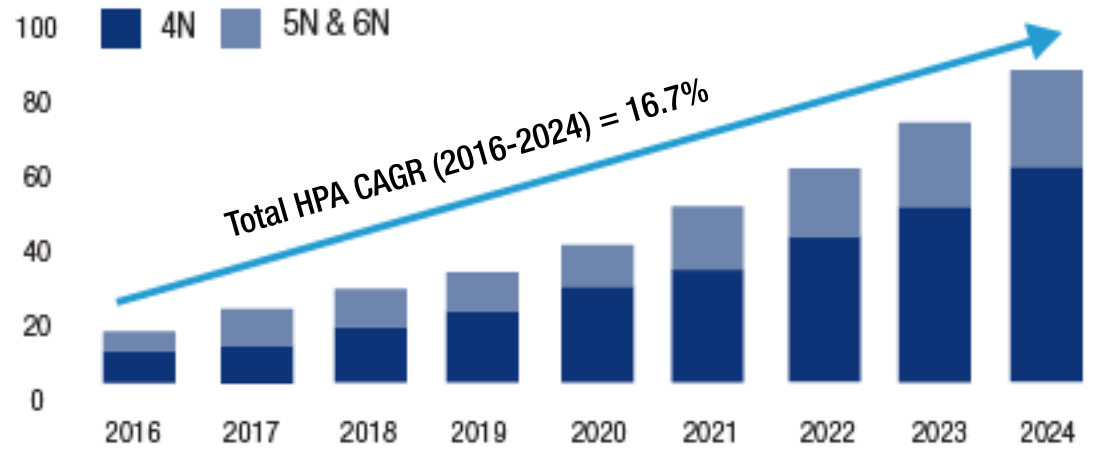
# 05 High Purity Alumina (HPA)



- HPA is the pure form of aluminium oxide ( $Al_2O_3$ ) HPA is the pre-cursor material for the manufacture of **sapphire glass**
- Its value derives from its physical properties of extreme hardness & chemical stability
- Purity is determined by the concentration of trace elements in the alumina compound eg, iron, magnesium, sodium
- Price and performance of HPA varies upon product density, particle size and distribution and degree of purity

4N HPA is the largest sector of the HPA market and is seen by CLL as the most logical sector of the market in which to focus in terms of demand volumes and margin optimisation

HPA Demand Outlook (2016-2024)



Source: Persistence Market Research

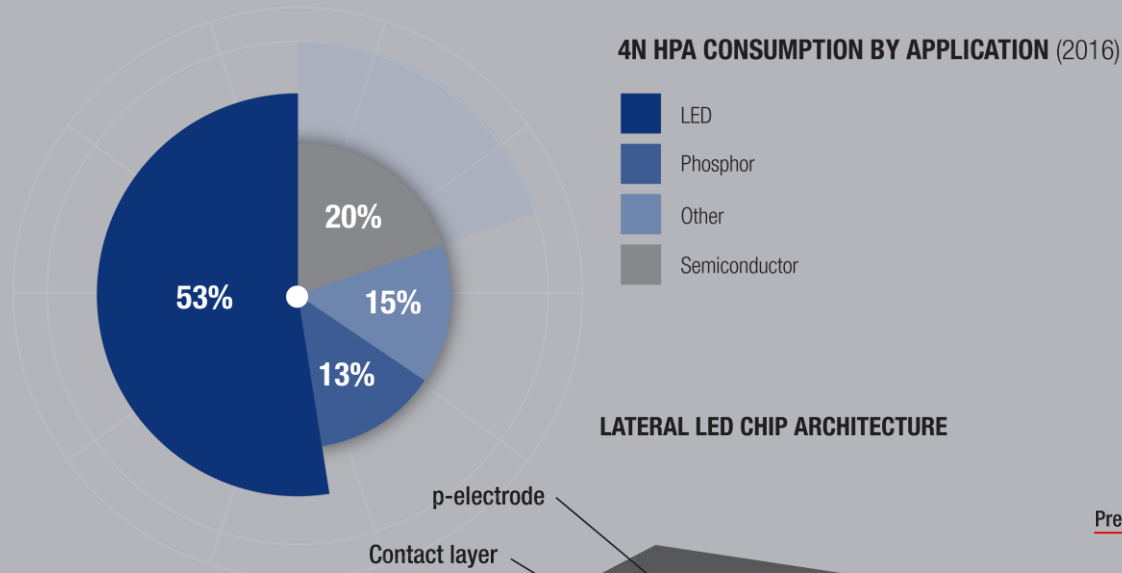
### HOW MANY 9's

|        |                 |  |
|--------|-----------------|--|
| SGA    | 99.5% purity    | ~US\$400/t                               |
| 3N HPA | 99.9% purity    | ~US\$6,000/t                             |
| 4N HPA | 99.99% purity   | ~US\$25,000/t                            |
| 5N HPA | 99.999% purity  | ~US\$50,000/t                            |
| 6N HPA | 99.9999% purity | By negotiation in a very limited market. |

# 06 Demand for HPA – Sectors

Demand for HPA is primarily being driven by the increasing adoption of LED (Light Emitting Diode) products, separators in lithium ion batteries and scratch resistant artificial sapphire glass for smartphone screens and watches

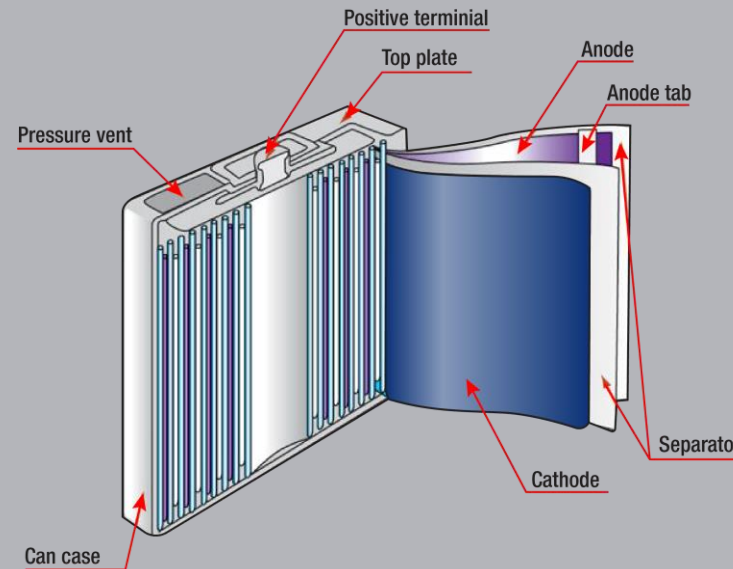
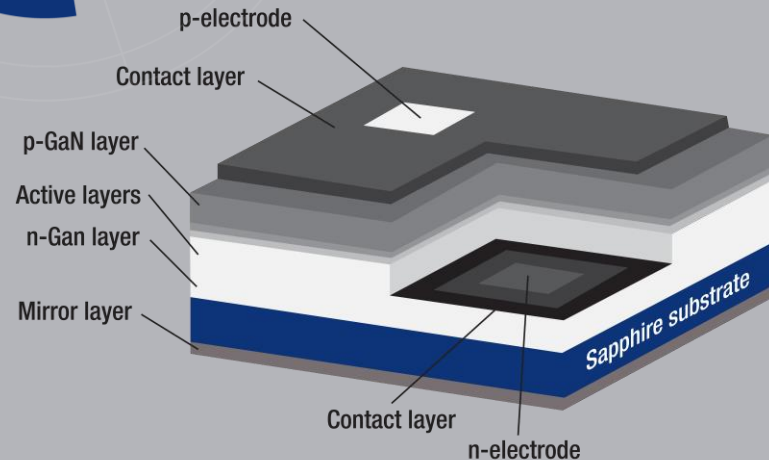
4N HPA CONSUMPTION BY APPLICATION (2016)



Growth for HPA has predominantly been driven by LED- based lighting applications which currently account for ~53% of the HPA market. LEDs are expected to account for ~60% of the HPA market by 2020

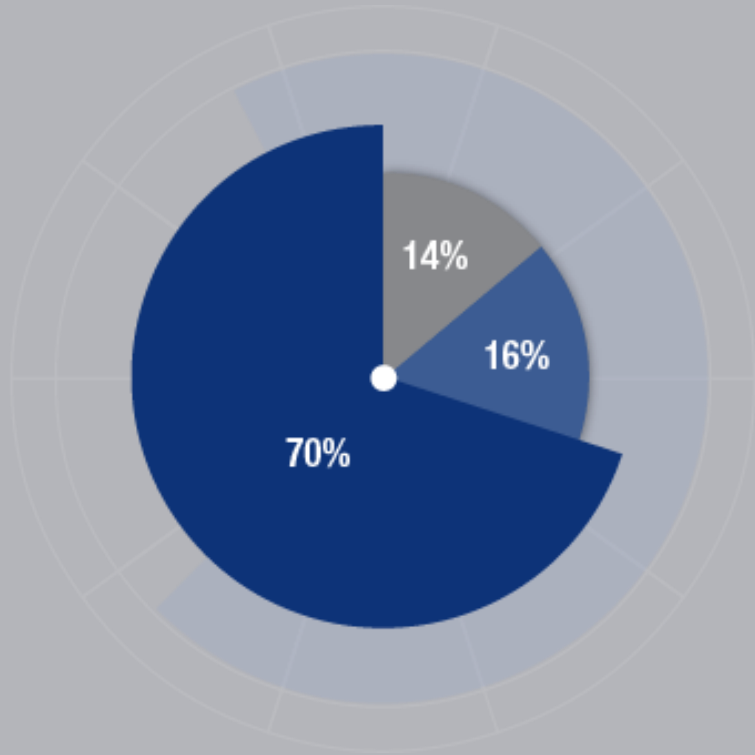
Scratch resistant sapphire glass for **mobile phone screens** and **watches**, separators in **lithium ion batteries** and **lenses** are the fastest growth areas in the HPA market

LATERAL LED CHIP ARCHITECTURE



# 06 Demand for HPA – Regions

Demand for HPA is primarily being driven by the increasing adoption of LED (Light Emitting Diode) products, separators in lithium ion batteries and scratch resistant artificial sapphire glass for smartphone screens and watches



HPA DEMAND BY GEOGRAPHIC REGION (2016)

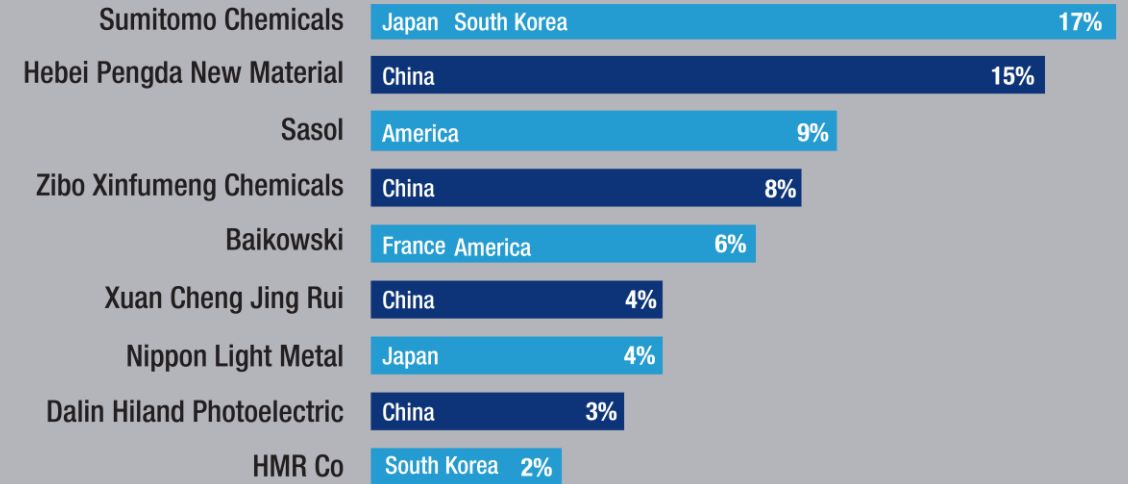
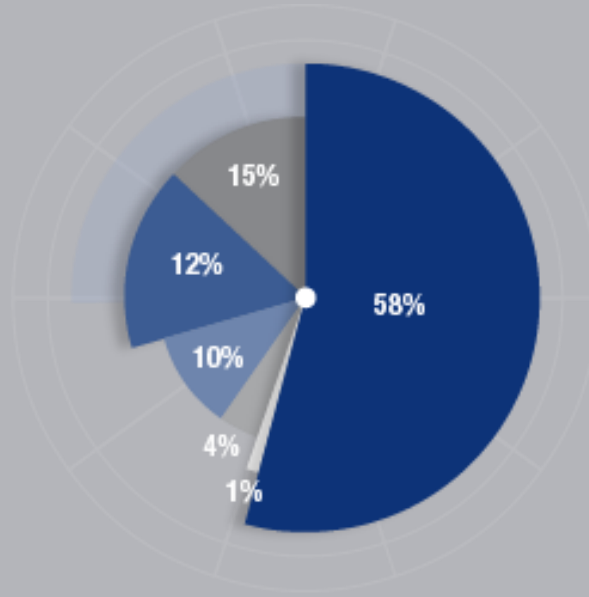
- Asia Pacific
- Europe / Middle East / Africa
- Americas

Growth demand is dominated by the APAC Region (~70% in 2016) primarily China, Japan and South Korea

As a would-be Australian based HPA producer, CLL is ideally placed to service the most dominant region of global HPA demand



# 07 Supply of HPA



GLOBAL HPA SUPPLY DISTRIBUTION - 2016E

% EXPECTED 2016 OUTPUT

SOURCE: PERSISTENCE MARKET RESEARCH

- Current HPA supply is concentrated in the Asia Pacific region (~83%) with China the most prolific producer



- Current production is dominated by large diversified chemical companies where HPA is a non-core product and an immaterial percentage of revenue (< 5% for Sumitomo Chemicals)

- CLL sees enormous opportunity as a focused HPA producer to:
  - Become a genuine alternative supply source to the existing dominant APAC producing countries, and more importantly
  - Fill an expected supply shortage as forecast HPA demand escalates over the next decade

- CLL stands to become an extremely low-cost HPA producer with its product mix of Ni-Co products offering potentially significant co-product credits






- Strong potential exists for long-term offtake agreements prior to commercial production**

# 08

## Peer Comparison - HPA Players

CLL plans to distinguish itself from its peers by producing 4N HPA from Laterite Ore



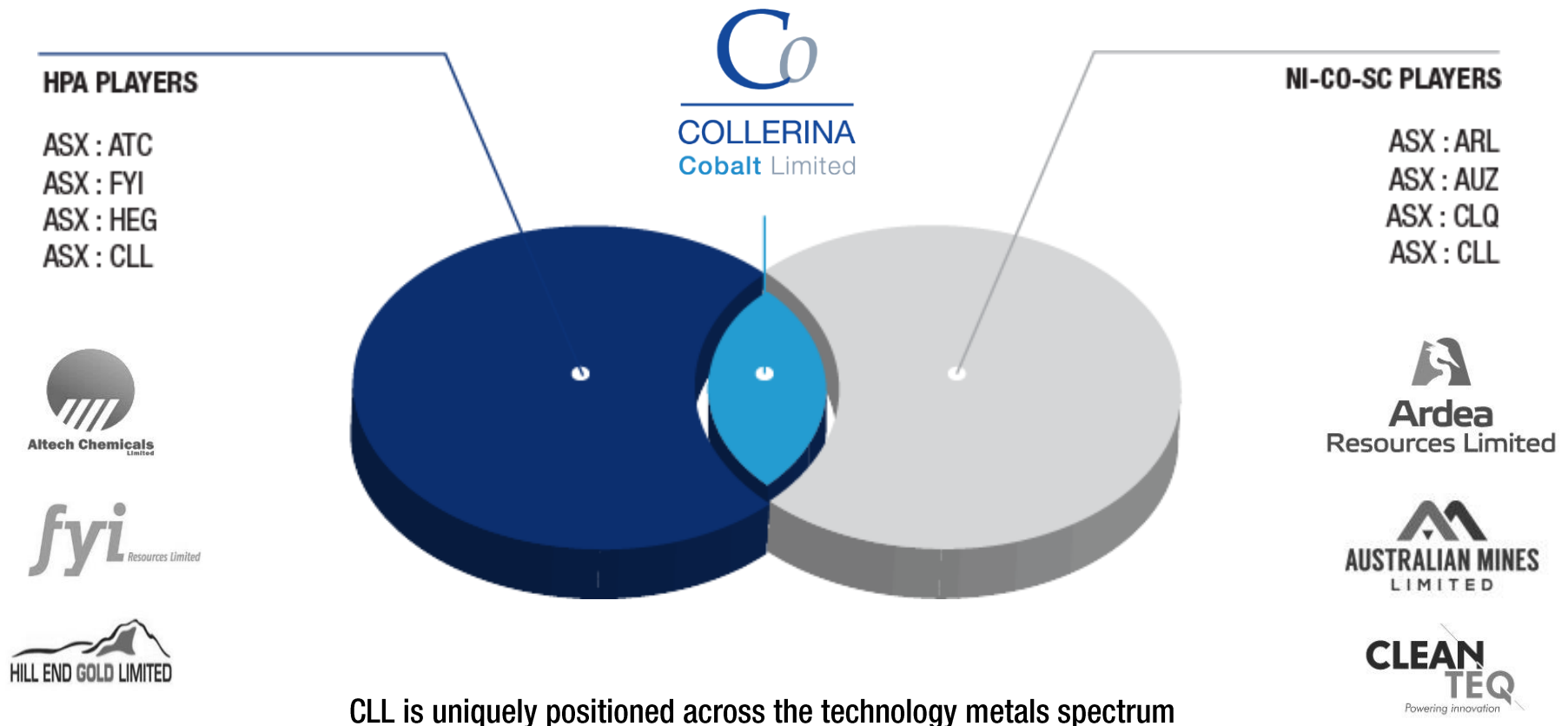
| FEEDSTOCK             | LATERITE ORE  | KAOLIN   | KAOLIN   | KAOLIN   | KAOLIN   |
|-----------------------|---|--|--|--|--|
| Targeted Products     | 4N HPA<br>Significant co-products  | 4N HPA<br>No co-products  | 4N HPA<br>No co-products  | 4N HPA<br>No co-products  | 4N HPA<br>No co-products  |
| Project Stage         | PFS Q2 2018   | PFS Q2 2018  | PFS Q1 2018<br>DFS mid-2019  | BFS 2015<br>FID Approved   | Companies' Creditors<br>Arrangement Act  |
| Metallurgical Process | CCAL + proprietary processes  | Acid leaching + proprietary<br>processes   | Acid leaching + proprietary<br>processes   | Acid leaching + proprietary<br>processes   | Acid leaching + proprietary<br>processes   |
| Acid Type             | Sulphuric Acid<br>H <sub>2</sub> SO <sub>4</sub>  | Hydrochloric Acid<br>HCl   | Hydrochloric Acid<br>HCl   | Hydrochloric Acid<br>HCl   | Hydrochloric Acid<br>HCl   |
| Process Pros/Cons     | Leaching at atmospheric<br>pressures.<br>No Pyro-Hydrolysis<br>Lower technical risk                                 | Leaching at high pressures &<br>temp. Pyro-hydrolysis<br>Higher technical risk                               | Leaching at high pressures &<br>temp. Pyro-hydrolysis<br>Higher technical risk                               | Leaching at high pressures<br>& temp. Pyro-hydrolysis<br>Higher technical risk                               | Leaching at high pressures &<br>temp. Pyro-hydrolysis<br>Higher technical risk                               |
| Targeted Production   | ~10,000 tpa   | 5,000-10,000tpa  | ???  | 4,500 tpa  | ???  |
| Capex                 | ???   | ???  | ???  | US\$298M   | C\$498.5M  |



Have produced a batch scale 4N HPA sample

# 09 A unique product offering

Deposit geology and exclusive process flowsheet IP uniquely positions CLL for the production of multiple high value revenue products of  
**HPA + nickel & cobalt + scandium oxide**





# 10

## Peer Comparison - Nickel/Cobalt Players

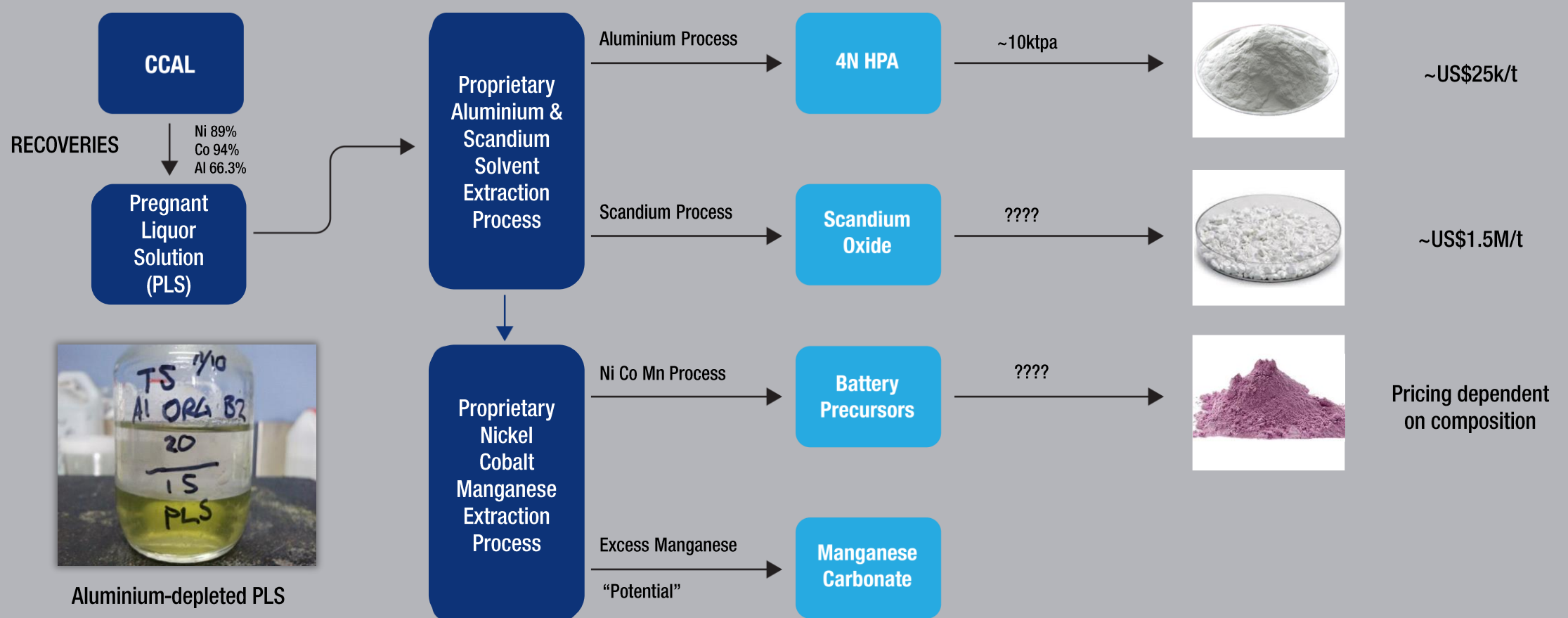


| PROJECT(S)                            | COLLERINA  | KNP/COBALT ZONE               | SCONI/FLEMINGTON   | CLEAN TEQ SUNRISE   |
|---------------------------------------|--|-------------------------------|--|---|
| Targeted Products                     | Ni/Co sulphate or MHP, Scandium oxide + HPA      | Ni/Co Sulphate Scandium Oxide | Ni/Co Sulphate Scandium Oxide  | Ni/Co Sulphate Scandium Oxide   |
| Project Stage                         | PFS Q2 2018                                      | PFS Q1 2018<br>DFS mid 2019   | PFS 2016<br>BFS April 2018   | PFS 2016<br>DFS Q1 2018   |
| Metallurgical Process                 | CCAL + proprietary processes                     | ???                           | Conventional HPAL + SX   | Conventional HPAL + Resin-in-Pulp (RIP)                                   |
| Acid Type                             | Sulphuric Acid<br>H <sub>2</sub> SO <sub>4</sub> | ???                           | Sulphuric Acid<br>H <sub>2</sub> SO <sub>4</sub>                           | Sulphuric Acid<br>H <sub>2</sub> SO <sub>4</sub>                          |
| Targeted Production                   | PFS Outcome                                      | ???                           | Nickel Sulphate ~24kt pa*<br>Cobalt Sulphate~ 3kt pa*<br>Scandium Oxide??? | Nickel Sulphate ~85kt pa<br>Cobalt Sulphate ~15ktpa<br>Scandium Oxide ??? |
| Capex                                 | PFS Outcome                                      | ???                           | ---  | US\$680M  |
| Market Capitalisation (Fully Diluted) | <b>\$84.6m</b>                                   | <b>\$155.2m</b>               | <b>\$281.1m</b>  | <b>\$851.8m</b>   |

\* Sconi project only

# 11 Metallurgical testwork – process flowsheet

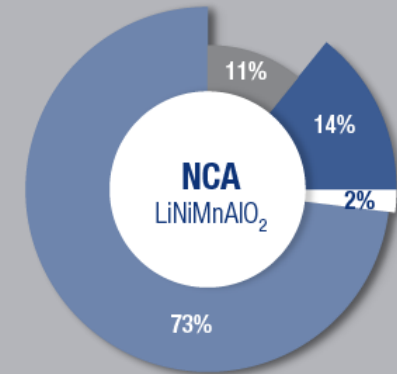
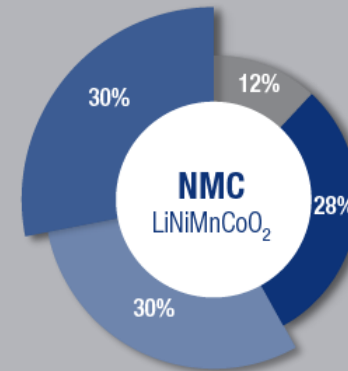
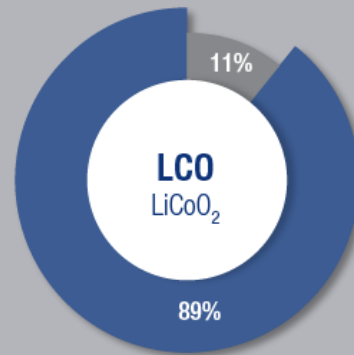
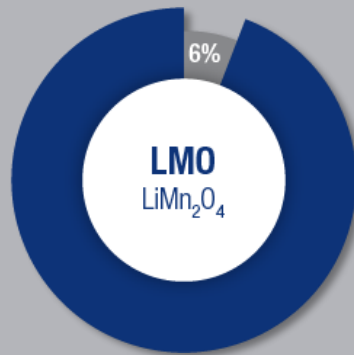
CLL's process flowsheet utilises a series of proprietary processes capable of delivering several high-end specialty product streams



# 12

## Nickel-Cobalt Sulphates are in hot demand

■ Cobalt ■ Nickel ■ Lithium ■ Manganese ■ Aluminium



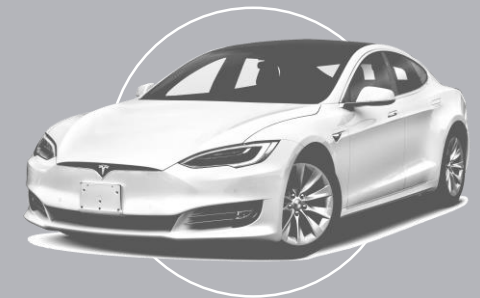
**Nissan Leaf**



**Apple iPhone**



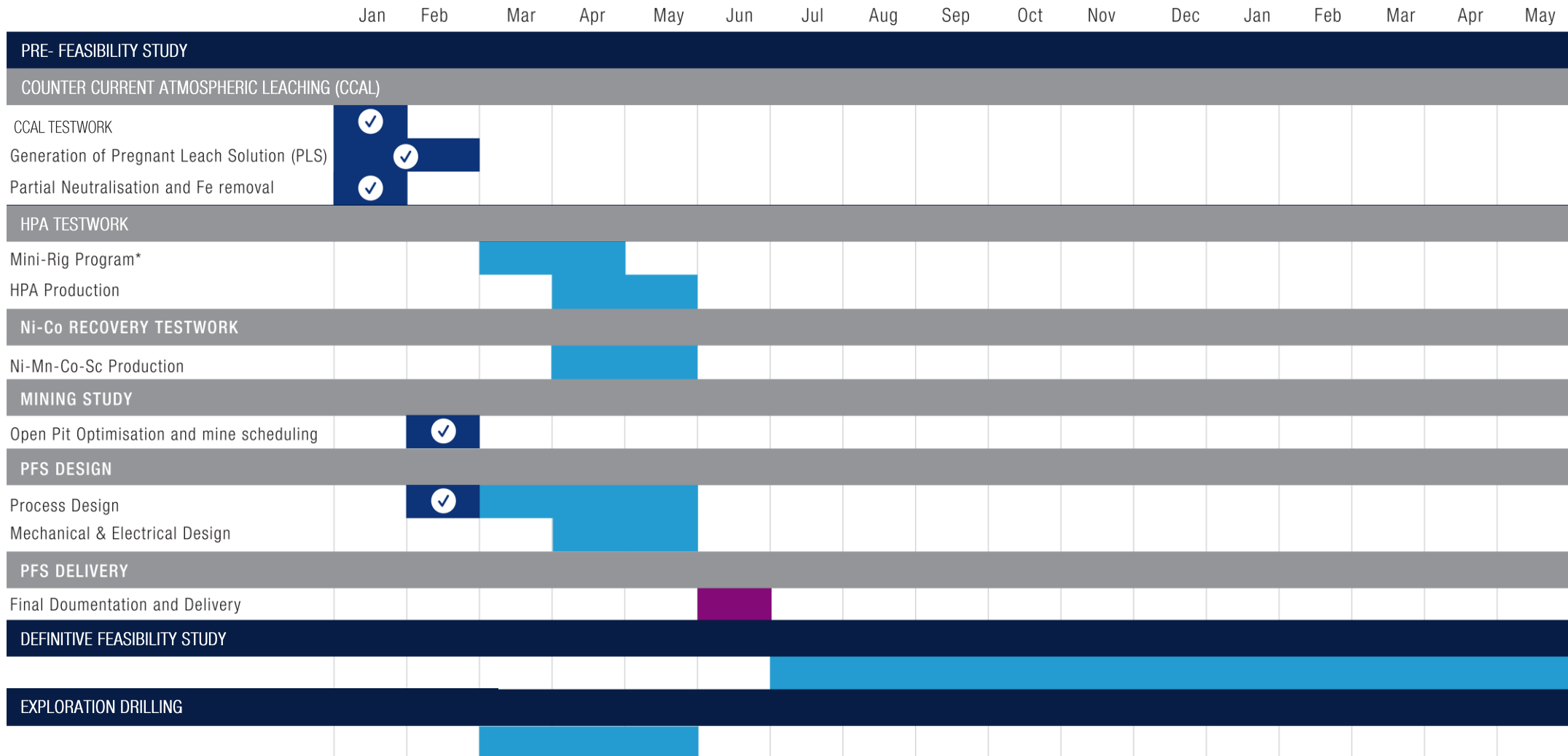
**Tesla Powerwall**



**Tesla Model S**

# 13

## Indicative timetable



# 14

## Collerina Cobalt – The value proposition



Unique deposit geology highly amenable to simple, low cost and well accepted processing techniques



Licensed proprietary processing technology to deliver multiple high-value product streams:  
**HPA**  
**Nickel**  
**Cobalt**



Anticipated modest capex and high operating margins



Highly experienced Board and management team with a track record in exploration success and project development



Numerous milestones to drive shareholder value over the next 12 months

**Norman Seckold**  
Chairman

[nseckold@collerinacobalt.com.au](mailto:nseckold@collerinacobalt.com.au)

**Justin Werner**  
Managing Director

[jwerner@collerinacobalt.com.au](mailto:jwerner@collerinacobalt.com.au)

**Rimas Kairaitis**  
Technical Director

[rkairaitis@collerinacobalt.com.au](mailto:rkairaitis@collerinacobalt.com.au)

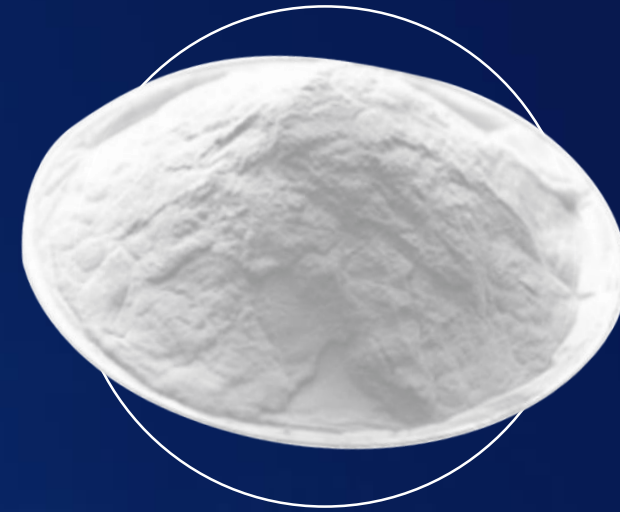
**Peter Nightingale**  
Director/Chief Financial Officer

[pnightingale@collerinacobalt.com.au](mailto:pnightingale@collerinacobalt.com.au)

**Cameron Peacock**  
Investor Relations and Business Development

[cpeacock@collerinacobalt.com.au](mailto:cpeacock@collerinacobalt.com.au)

+61 (0) 439 908 732





# COLLERINA COBALT LTD (ASX:CLL)

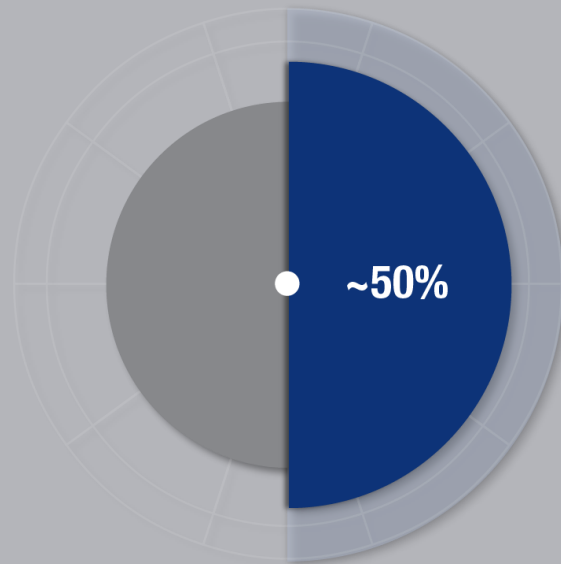
MINING THE METALS OF THE FUTURE

## **Appendices**

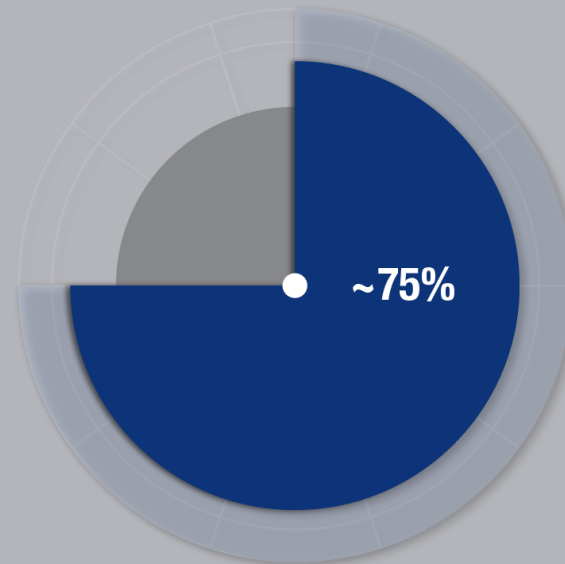
# 01 appendices

## Li-Bs are driving nickel - cobalt demand

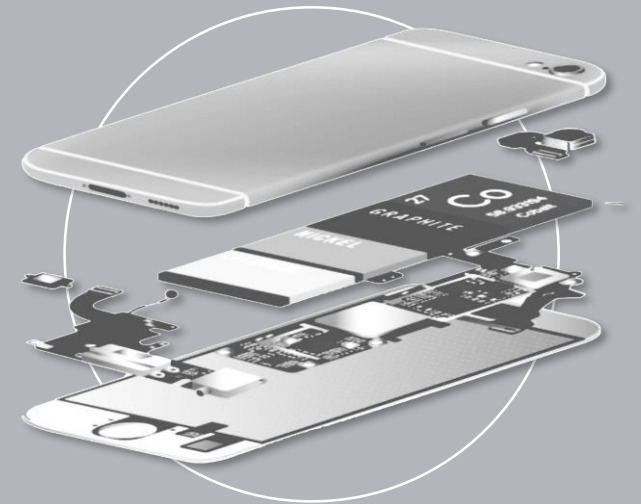
Cobalt is a critical component in the cathode of rechargeable lithium-ion batteries (Li-B's), playing an important role in improving battery life, energy density and stability



**~50% of world cobalt demand comes from the Li-B market with this percentage set to grow to >75% by 2025**

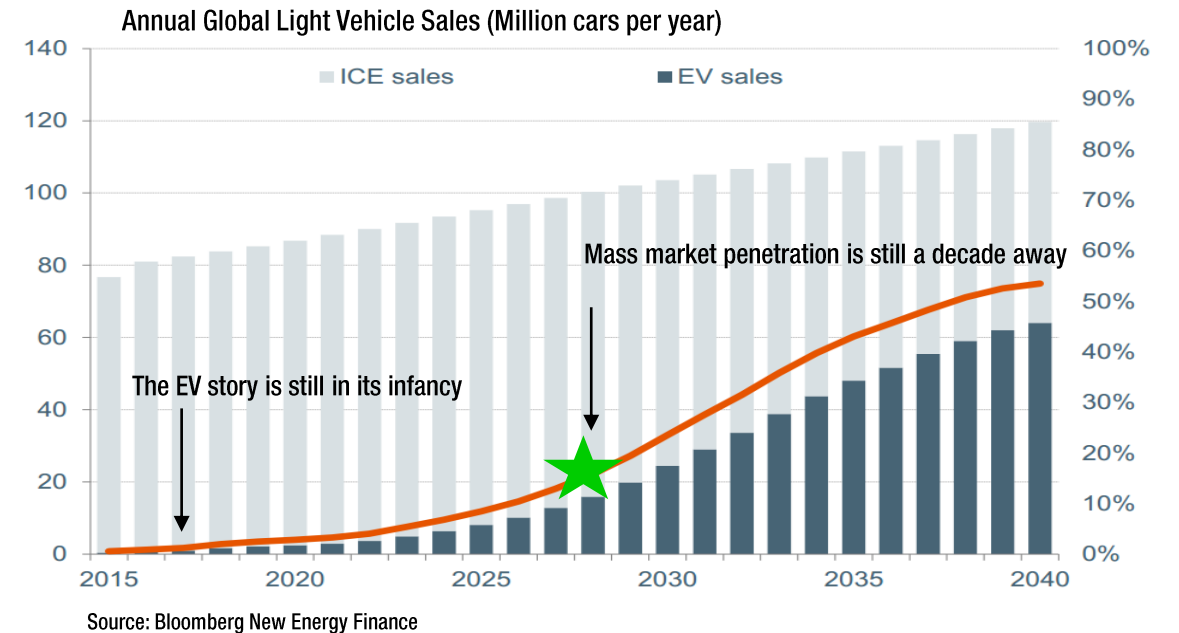
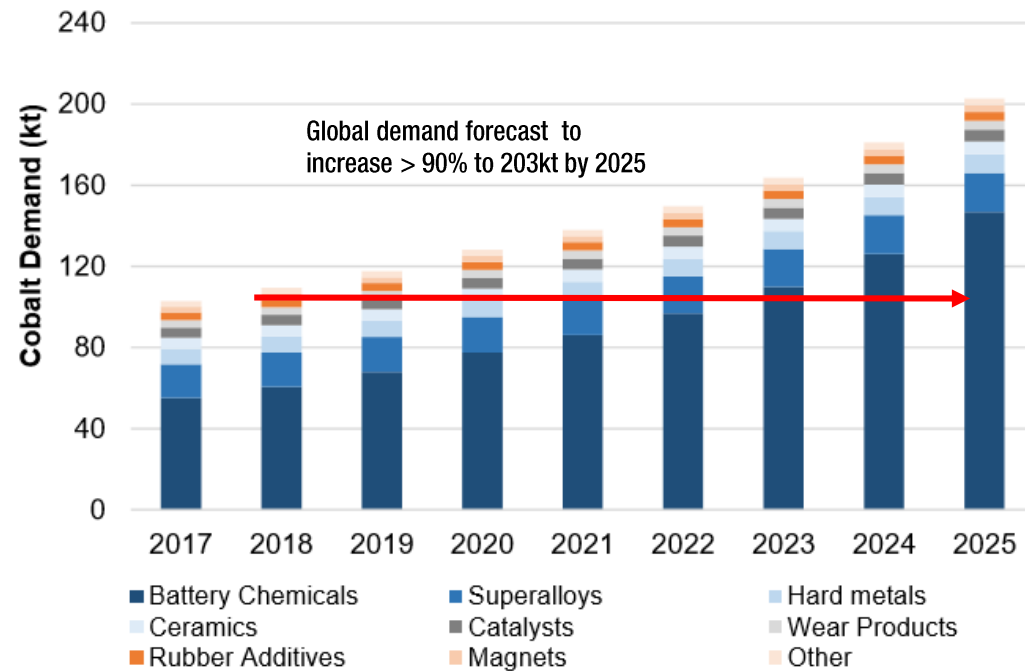


**~75% of all batteries are expected to contain cobalt in some capacity led by the continued adoption of mobile phones and EV's**



# 01 appendices

## Li-Bs are driving nickel - cobalt demand



# 02 appendices

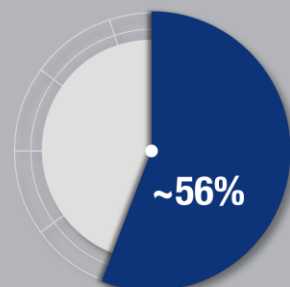
## Cobalt - the supply equation



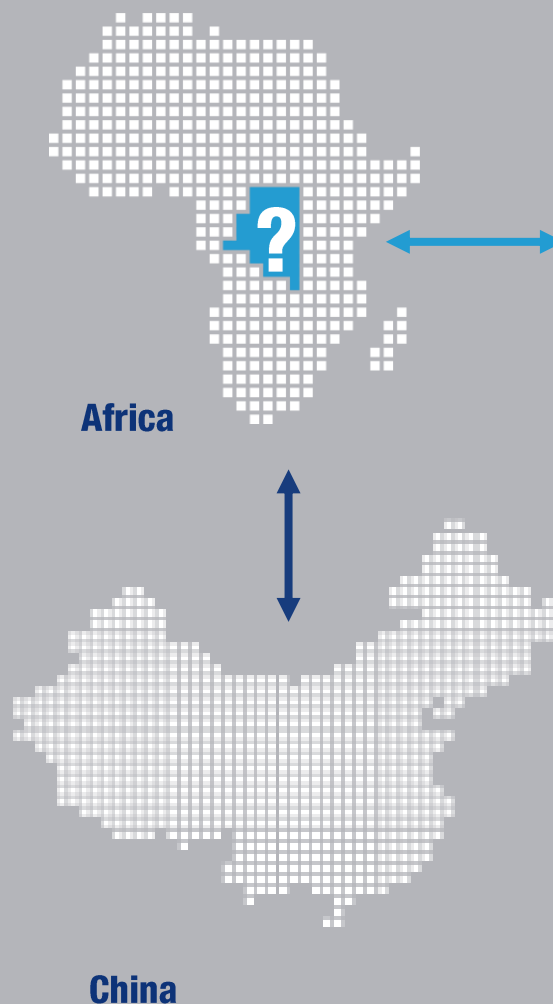
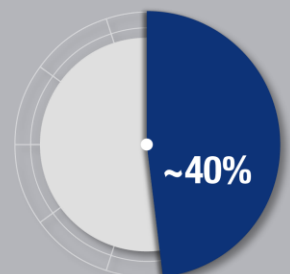
~95% of global cobalt production results as a by-product of copper and nickel mining meaning future supply is susceptible to the outlook for these metals



~56% of global production comes from the Democratic Republic of Congo (DRC) of which nearly half is thought to be via artisanal mining



~40% of refined cobalt production comes from China, with ~60% of China's unrefined cobalt sourced from the DRC



Questions remain over the DRC's political stability with ongoing violence and the constant threat of civil war. The country's widespread use of child labour is also bringing increased scrutiny on the sector's informal mining practices which serve as a threat to continued supply



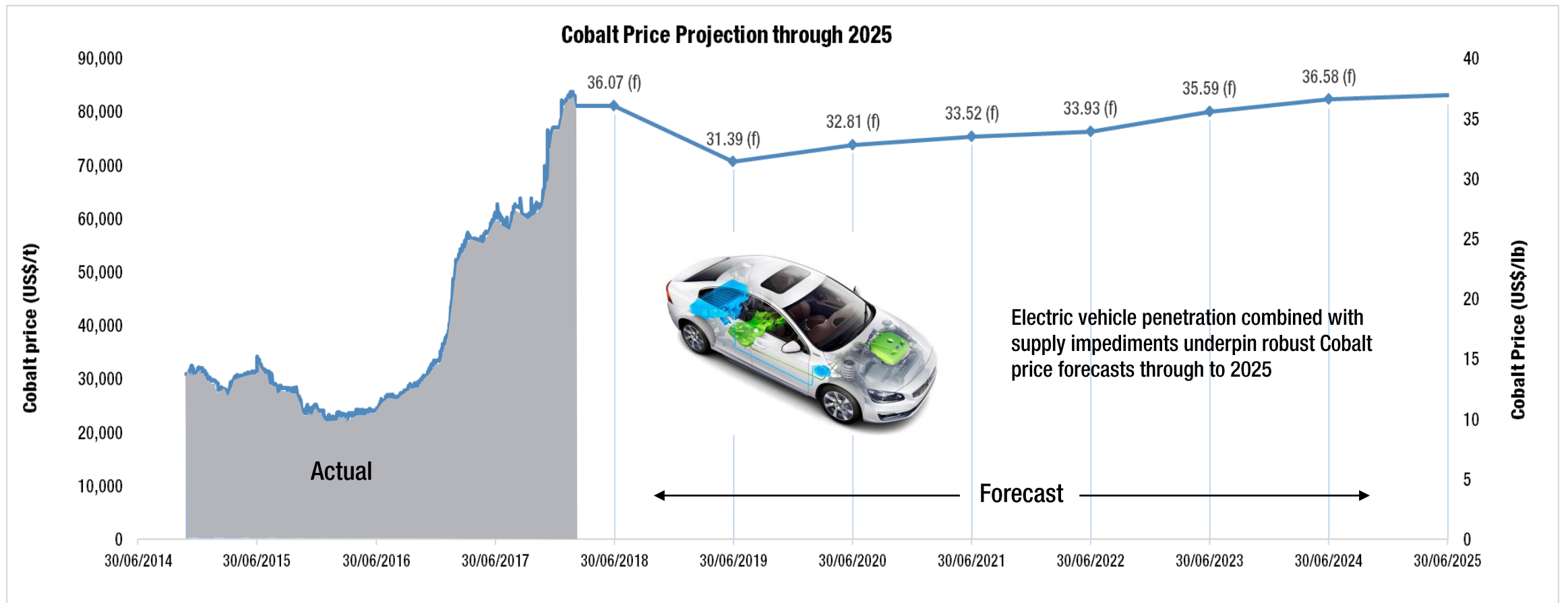
With the DRC and China dominating the global cobalt trade there is concentrated supply risk for the remainder of the market

# 03 appendices

## Cobalt price projection through 2025

Robust demand fundamentals and a constrained supply-side outlook underpin cobalt's recent price rise and positive outlook

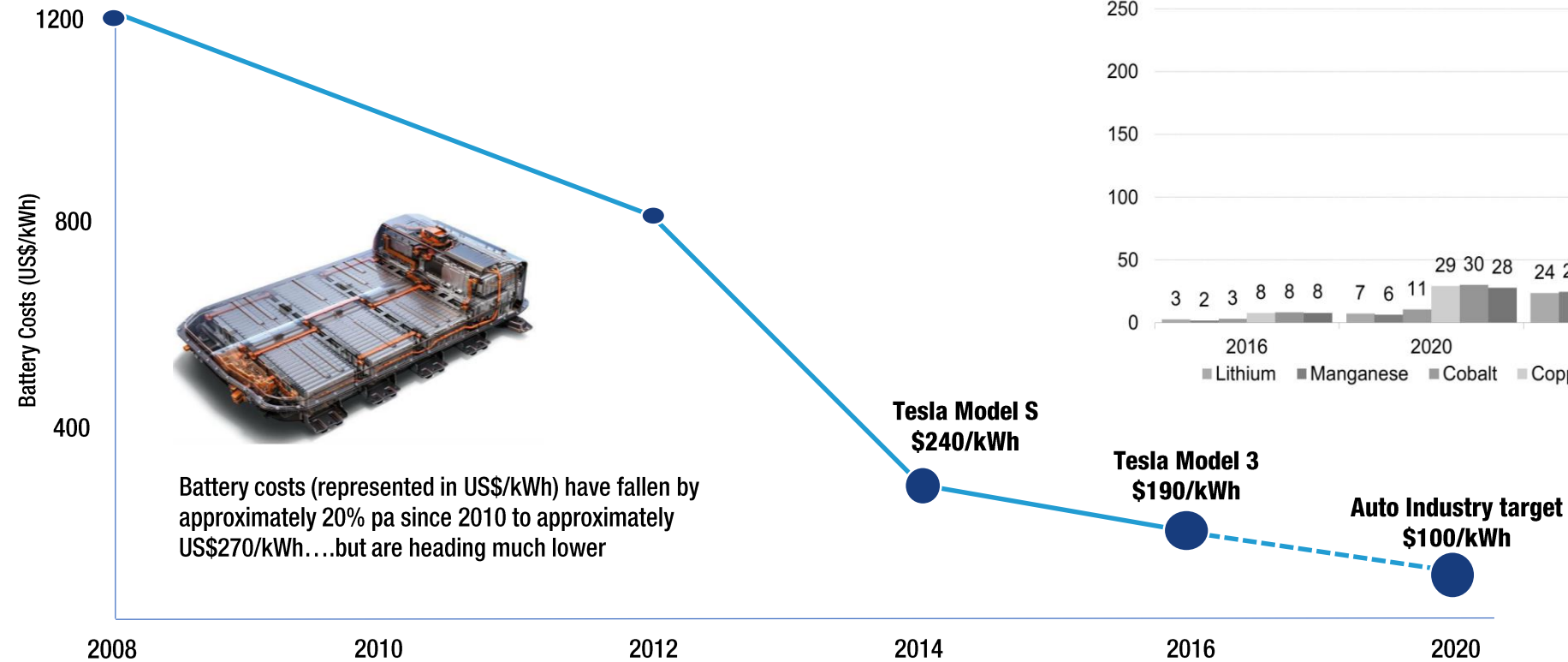
Source: Bloomberg and Canaccord Genuity



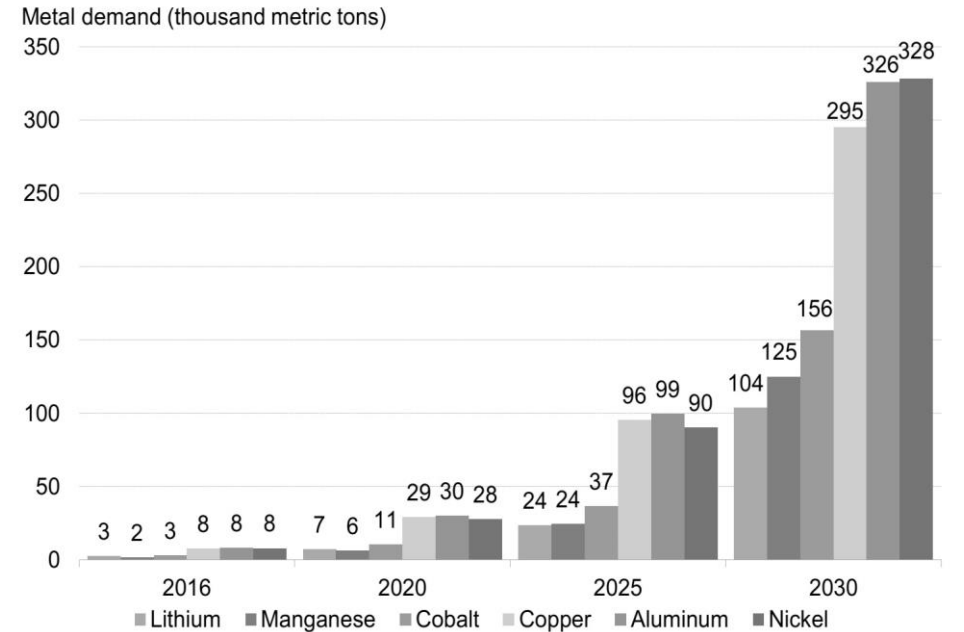
# 04 appendices

## Battery costs will underpin EV penetration

Batteries with lower cost structures and greater energy densities will drive EV penetration and demand for battery metals



Forecast demand for key battery materials



Source: Bloomberg New Energy Finance



# 05 appendices

## The CCAL / HPA process

### CCAL - Stage 1

Ore is leached in a lower concentrate free acid solution producing a pregnant leach solution (PLS) with relatively low residual acidity. The leach residue solids from the first stage are then washed and forwarded to the second stage of leaching.



### CCAL - Stage 2

A concentrated sulphuric acid is used to liberate the more tenacious material. The leach solution from the second stage, with a much higher residual acid concentration, is recycled to the first stage leach as the acid source.



### HPA Processing

A low acidity Pregnant Leach Solution (PLS) from the CCAL process is subject to propriety solvent extraction and refining steps with the aim of producing a 4N (99.99% purity) HPA.



### Nickel and Cobalt recovery

Testwork is using propriety processes are being investigated to produce high purity/high value Ni-Co products from residual solution.



# 06 appendices

## Statement of Compliance

Information regarding the Mineral Resource at the Collerina project was prepared and first disclosed under the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. See ASX announcement dated 23 June 2011. It has not been updated since to comply with the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' on the basis that the Company is not aware of any new information or data that materially affects the information and, in the case of the resource estimate, all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed.

The information in this report that relates to Mineral Resources is based on information compiled by Collerina Cobalt staff and contractors and approved by Mr Michael Corey, PGeo., who is a Member of the Association of Professional Geoscientists of Ontario (APGO) in Canada. Mr Corey is employed by the Company and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking 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 Corey has consented to the inclusion in this report of the matters based on his information in the form and context in which they appear.

Information in this announcement relating to the process development testwork is based on test work results compiled by Mr Boyd Willis, an Independent Consultant trading as Boyd Willis Hydromet Consulting. See ASX announcements dated 21 February 2018, 8 December 2017, 30 November 2017, 29 November 2017, 24 November 2017 and 13 November 2017. The Company is not aware of any new information or data that materially affects the information and all material assumptions and technical parameters underpinning the process development testwork continue to apply and have not materially changed. Mr Willis is a Fellow and Chartered Professional of The Australasian Institute of Mining and Metallurgy (AusIMM). Mr Willis has sufficient experience which is relevant to metal recovery from the style of mineralisation and type of deposits under consideration and to the activity which he is undertaking to qualify as a Competent Persons under the 2012 Edition of the 'Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves'. This includes over 21 years of experience in metal recovery from Laterite ore. Mr Willis consents to the inclusion of the technical data in the form and context in which it appears.