

27 February 2017

## Clean TeQ Presentation – BMO Capital Markets Conference

Co-Chairman of Clean TeQ Holdings Limited (ASX:CLQ) (**Clean TeQ** or **Company**) Mr Robert Friedland and Co-Chairman and CEO Sam Riggall will be presenting the Company in a range of forums at the BMO Capital Markets 26th Global Metals & Mining Conference in Florida on 26 February to 1 March 2017.

The BMO Capital Markets Conference brings together metals and mining industry leaders and institutional investors from around the world. More than 1,000 industry professionals representing nearly 500 companies from 32 countries and six continents are expected to attend the conference, one of the industry's most important global gatherings.

“We are seeing a significant increase in the level of North American investor awareness and interest in Clean TeQ. The BMO Conference provides us with a great opportunity to market the Company to the large North American audience”, stated Co-Chairman and CEO Sam Riggall.

The presentation for the events is attached.

**For more information about Clean TeQ contact:**

Sam Riggall, Co-Chairman and CEO or Ben Stockdale, CFO +61 3 9797 6700

**About Clean TeQ Holdings Limited (ASX: CLQ)** – Based in Melbourne, Clean TeQ, using its proprietary Clean-iX® continuous ion exchange technology, is a leader in metals recovery and industrial water treatment.

**About the Syerston Project** – Clean TeQ is the 100% owner of the Syerston Project, located in New South Wales. The Syerston Project is one of the largest and highest grade scandium deposits in the world and one of the highest grade and largest nickel and cobalt deposit outside of Africa.

For more information about Clean TeQ please visit the Company's website [www.cleanteq.com](http://www.cleanteq.com).

*This release may contain forward-looking statements. The actual results could differ materially from a conclusion, forecast or projection in the forward-looking information. Certain material factors or assumptions were applied in drawing a conclusion or making a forecast or projection as reflected in the forward-looking information.*



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## SYERSTON PROJECT

## NICKEL AND COBALT SULPHATE

FOR THE LITHIUM-ION  
BATTERY INDUSTRY

SAM RIGGALL, CEO

BMO GLOBAL METALS AND MINING  
CONFERENCE 2017

# DISCLAIMER

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## IMPORTANT INFORMATION

This presentation has been prepared by the management of Clean TeQ Holdings Limited (the 'Company') in connection with meetings with investors and potential investors and not as specific advice to any particular party or person. The information is based on publicly available information, internally developed data and other sources. Where any opinion is expressed in this presentation, it is based on the assumptions and limitations mentioned herein and is an expression of present opinion only. No warranties or representations can be made as to the origin, validity, accuracy, completeness, currency or reliability of the information. The Company disclaims and excludes all liability (to the extent permitted by law) for losses, claims, damages, demands, costs and expenses of whatever nature arising in any way out of or in connection with the information, its accuracy, completeness or by reason of reliance by any person on any of it.

Certain statements in this presentation are forward looking statements. By their nature, forward looking statements involve a number of risks, uncertainties or assumptions that could cause actual results or events to differ materially from those expressed or implied by the forward looking statements. These risks, uncertainties or assumptions could adversely affect the outcome and financial effects of the plans and events described herein. Forward looking statements contained in this presentation regarding past trends or activities should not be taken as representation that such trends or activities will continue in the future. You should not place undue reliance on forward looking statements, which apply only as of the date of this presentation.

Actual results and developments of projects and nickel, cobalt and scandium market development may differ materially from those expressed or implied by these forward looking statements depending on a variety of factors.

This presentation does not constitute or form part of any offer or invitation to sell, or any solicitation of any offer to purchase any shares in the Company, nor shall it or any part of it or the fact of its distribution form the basis of, or be relied on in connection with, any contract or commitment or investment decisions relating thereto, nor does it constitute a recommendation regarding the shares of the Company. Past performance cannot be relied upon as a guide to future performance.

Please refer to the back of this presentation for information concerning the calculation of reserves and resources referred to herein, and the consents provide the respective Competent Persons.

For further details on the content of this presentation, please refer to the ASX releases on the Company's website.

# CORPORATE OVERVIEW

## Issued Capital

ASX code	CLQ
US OTC market (OTCQX Best)	CTEQF
Shares	478.8 M
Options	48.0 M
Performance Rights	4.9 M
Share Price (23 Feb 2017)	A\$0.80
52-week Trading Range	A\$0.12 - 0.80
Market Capitalisation (undiluted)	A\$383.0M

## Shareholders

Total shareholders	3,176
Robert Friedland	19.35%
Australian Super	7.0%
Board & Management <sup>1</sup>	6.8%

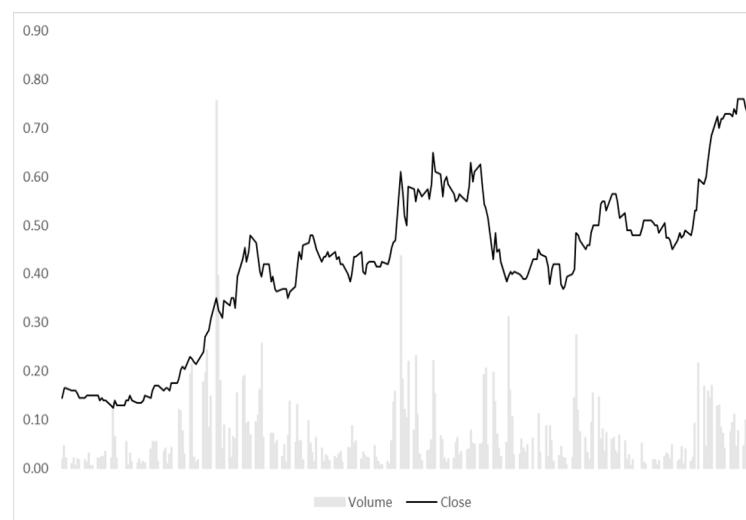
<sup>1</sup> Excludes options and performance rights.

<sup>2</sup> Share price over 12 month period to 23 February 2017.

## Cash and Debt

Cash @ 31 Dec 2016	A\$15.5 M
Liabilities (Mar-18 notes)	A\$3.0 M

## Share Price (A\$/share)<sup>2</sup>



# THE ELECTRIC REVOLUTION

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# AUTOMAKERS ARE NOW RESPONDING

EV'S ARE MOVING TO THE MAINSTREAM



VW

Forecasting sales of **2 to 3 million pure EV's by 2025**, or 25% of sales, as well as potential investment in a **multi-billion euro battery plant**



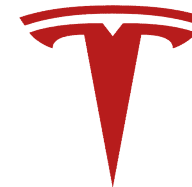
BMW

Forecasting 100,000 x-EV sales in 2017, and targeting EV's as **15-25% of its worldwide sales by 2025**



DAIMLER

**Ten new EV models** by 2025 supported by a **€10 billion investment program**, potentially including **battery manufacturing**



TESLA

Tesla 3 was the **most successful automotive pre-launch in history**, with 400,000 buyers reserving a car for delivery from 2017



RENAULT NISSAN-  
MITSUBISHI

Will catapult to world's largest auto manufacturer, **targeting 1.5 million EV sales by 2020**. Nissan Leaf is world's top selling plug-in EV

# BATTERY PACK COSTS ARE FALLING

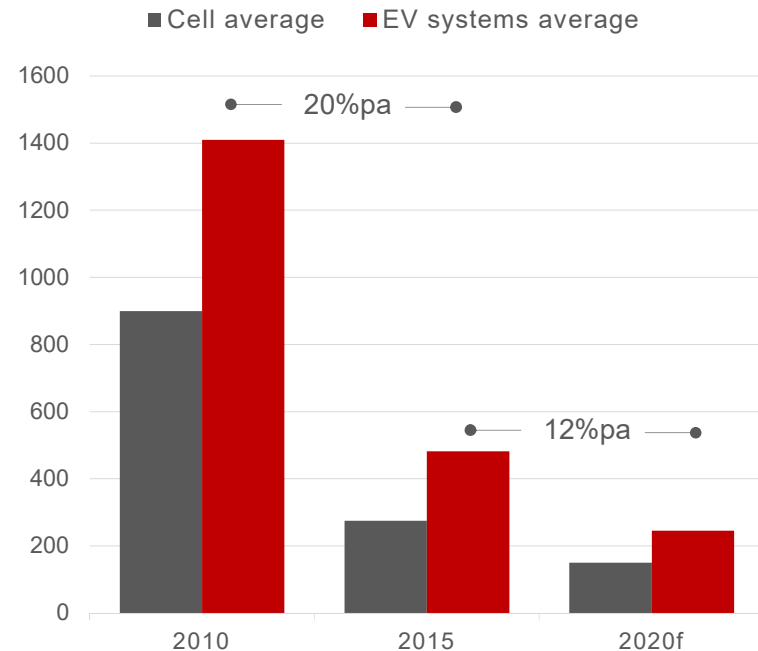
## ECONOMIES OF SCALE AND THE EXPERIENCE CURVE



Last five years has seen **20% pa cost reduction** in EV battery pack systems

At the current rate of improvement, EV drivetrains are **forecast to become competitive with combustion engines within five to ten years**

Battery Costs Are Falling (\$/kWh)



Source: Deutsche Bank, Lithium 101, May 2016

# NEW BATTERY CAPACITY IS COMING

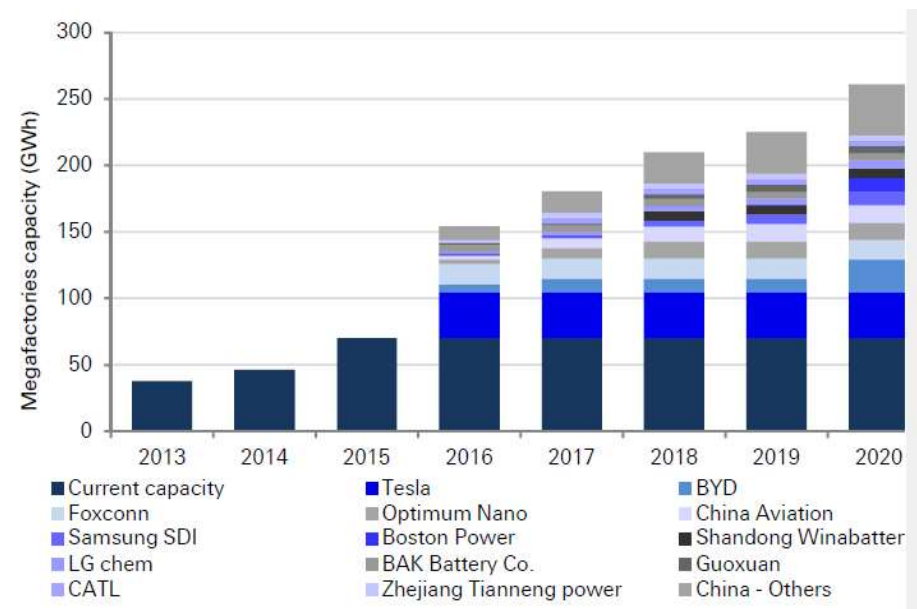
ALREADY ~US\$20B OF COMMITTED INVESTMENT

Tesla is important, but **the real growth story is in China**

China is now pushing for an aggressive California-style Zero Emission Vehicle (ZEV) program: **8% EV by 2018, 12% by 2020**

Given a 1% EV adoption rate in China today, that target translates to a **12x increase** in the number of electric cars to be sold in China

Chinese **technical capability** is fast approaching Japanese and Korean manufacturers



Source: Deutsche Bank, Lithium 101, May 2016





HOW IS THE SUPPLY CHAIN RESPONDING?  
IT'S BUILDING, FAST...

Scanning electron micrograph (SEM) showing numerous spherical and irregularly shaped particles of varying sizes, likely cathode materials, scattered across a dark background. The particles exhibit different surface textures, some appearing smooth and others more porous or crystalline.

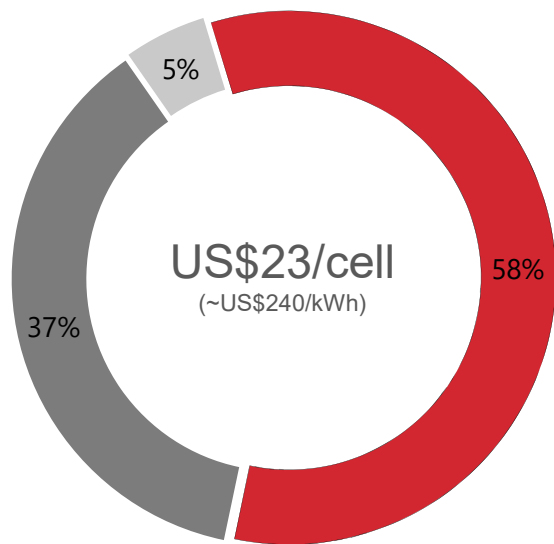
# CATHODE MARKET

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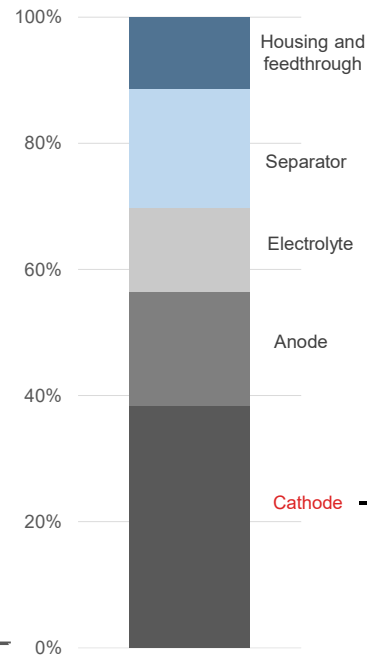
# CATHODE – THE KEY TO COST

## NICKEL AND COBALT PRICES DRIVE CELL COST

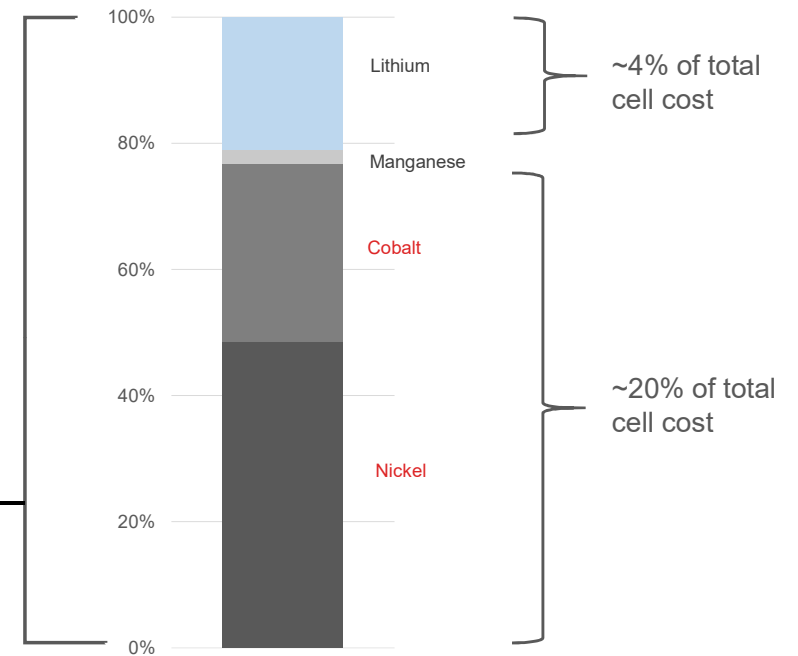
■ Raw Materials   ■ Manufacturing Costs   ■ Producer Margin



Raw Material Cost Breakdown



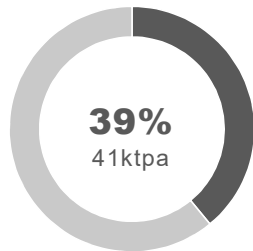
Metal Cost in Cathode Active Material



Source: Roland Berger (2012) and internal analysis. Assumes a 96Wh PHEV cell (26Ah, 3.7V) using NCM622 cathode chemistry. Cathode cost includes non-metallic materials (carbon black, binder, foil). Internal assumptions concerning split of costs assumes average long-term prices of Ni US\$7.00/lb; Co US\$12.00/lb; Mn US\$1.00/lb; Li US\$6.50/kg (as LCE).

# CHEMISTRY BY MARKET

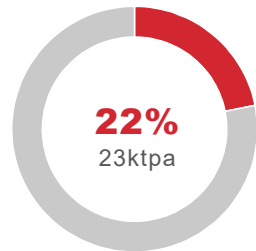
DOMINANT CHEMISTRIES FOR EV REQUIRE NICKEL AND COBALT



## LCO

(Lithium-Cobalt-Oxide)

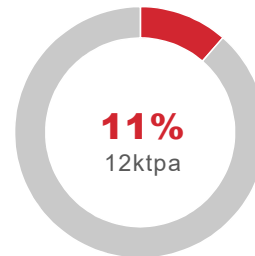
Still one of the highest energy density chemistries, but expect to see only steady growth as automotive and utility-scale applications grow



## NCM

(Nickel-Cobalt-Manganese)

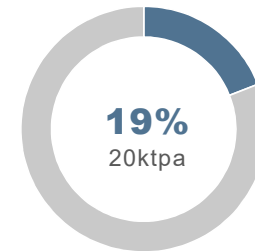
Experiencing fastest growth with a good mix of energy density, power, cost and safety for automotive applications; new chemistries constantly developing



## NCA

(Nickel-Cobalt-Aluminium)

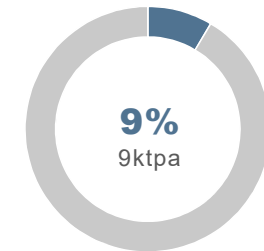
Extremely high energy density, power and manufacturing experience make it a good candidate for automotive, such as the A18650



## LMO

(Lithium-Manganese-Oxide)

Relatively low energy density (one-third of LCO), but the absence of cobalt makes this a low-cost alternative cathode material



## LFP

(Lithium-Iron-Phosphate)

Reasonable energy density but lower power; lower cost raw materials are offset by poor conductivity and higher unit costs from assembly process

Source: Avicenne Energy Analysis 2014



“The main determinants on the cost of the cell are the price of the nickel **in the form that we need it** ... and the cost of the synthetic graphite with silicon oxide coating.”

- Elon Musk, Tesla CEO



The EV battery industry requires **metal to be supplied as salts**, usually as sulphates, to manufacture cathode precursors

The cost of converting metal units to sulphate form is often represented in the market price by a '**sulphate premium**' paid over and above the contained metal value

# CATHODE DEMAND FORECAST

## IMPLICATIONS FOR RAW MATERIAL DEMAND

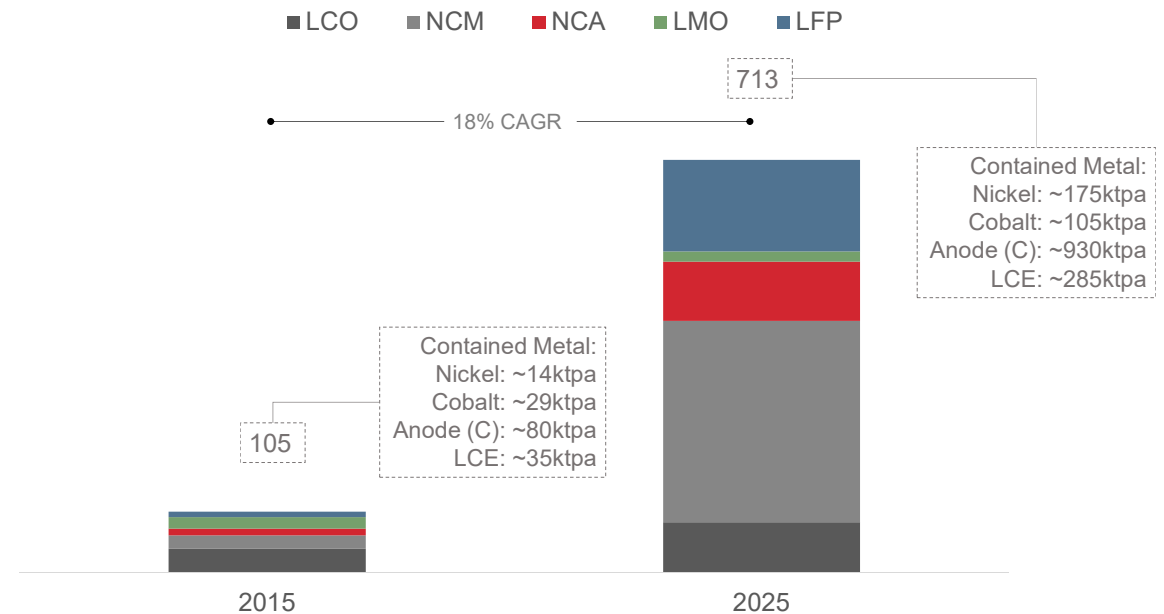
Use of nickel and cobalt dominant chemistries is accelerating in China

Of the 10 top selling Chinese EV's using LFP chemistry, six are already converting to NCM

“We believe this potential [Chinese] subsidy plan would further promote the development of NMC over LFP in the next few years. The **NMC penetration rate should climb significantly faster than we previously expected.**”

- Deutsche Bank, 2 Dec 2016

Cathode Raw Material Demand ('000 tonnes)



Source: 2015 data based on Avicenne Energy Analysis. 2025 case based on internal company estimates, utilising an EV adoption rate based on the average from five banks and industry consultant forecasts: HEV 5.7m, PHEV 2.3m, BEV 5.1m. EV applications forecast at 289 GWh. Non-EV applications forecast at 135GWh. Assumes an average battery size of 50kWh/BEV. Chemistry adoption rates in 2025 for EVs are NCM<sub>622</sub> 60%, NCA 25% and LFP 15%. No allowance for yield losses or process inefficiencies at pack or cell level, nor metal recycling rates.

# COBALT

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## A PROBLEMATIC SUPPLY CHAIN

“The majority of the cobalt is heading straight to China. Their global hold is huge.”

- CRU 2016

95%

Percentage of cobalt produced globally as by-product from copper and nickel mining

65%

Percentage of global cobalt production originating in the Democratic Republic of Congo

45%

Percentage of DRC cobalt mined artisanally

Source: Darton Cobalt Market Review 2015-2016



CHILDREN MINING COLTAN, KIVU REGION, DRC

“While the occasional [analyst] questions the availability of enough lithium or flake graphite to satisfy soaring demand from the battery industry, everybody has overlooked or ignored the most critical mineral constraint – Cobalt. It’s a truly gargantuan challenge. A Gigarisk!”  
- investorintel.com, March 2016



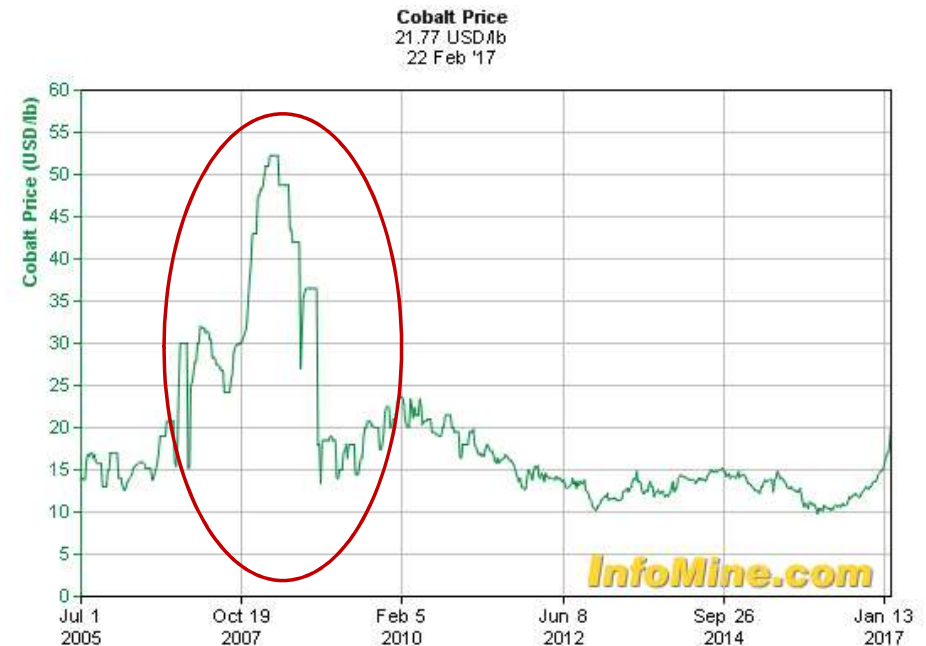
# COBALT PRICE

## RISING QUICKLY FROM HISTORIC LOWS

Cobalt was one of the best performing metals in 2016, with price increasing ~50% over the year

Significant upside in the event of supply disruption

At Syerston cobalt is co-product, not by-product: cobalt is ~45% of Syerston's revenues at today's spot metal prices<sup>1</sup>



1. Prices taken as at 23 Feb 2017, excludes scandium revenue.

# SYERSTON PROJECT

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SYERSTON ORE

# SYERSTON PROJECT

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## OVERVIEW

Syerston is a laterite (iron-hosted) mineral resource, rich in nickel, cobalt and scandium, located **350km west of Sydney and 100% owned by Clean TeQ**

Uniquely positioned as one of the **largest and highest grade sources of cobalt outside Africa**

Syerston will be the **first mine developed to exclusively supply the global lithium ion battery industry**, with high-purity nickel and cobalt sulphate

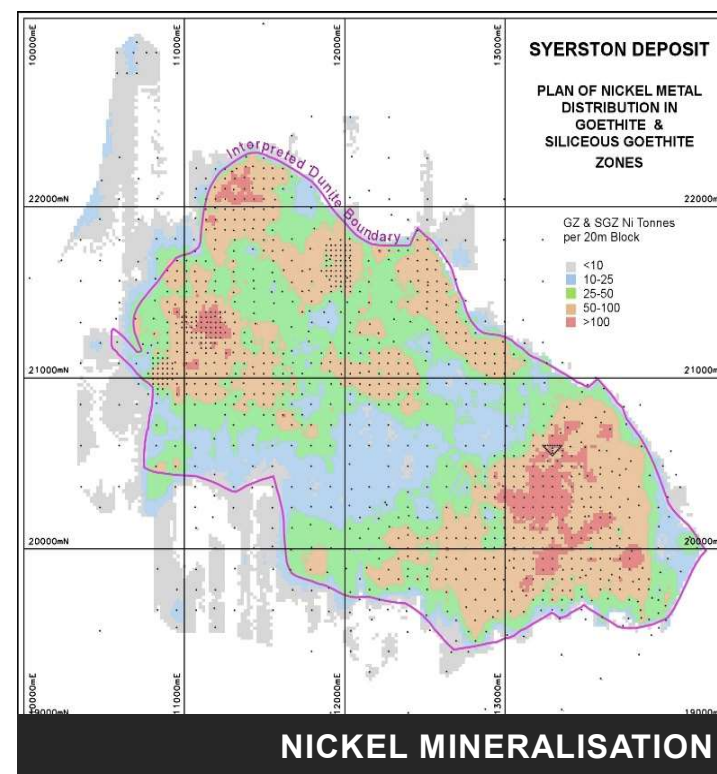
# MINERAL RESOURCE

## LOW MINING RISK

Over **1,300 drill holes** to define a significant nickel / cobalt / scandium resource

The resource is **shallow** (5m to 40m) and extends over a 2km horizon; **simple and low risk** strip-mining

Mining accounts for a **small fraction of total cash operating costs**



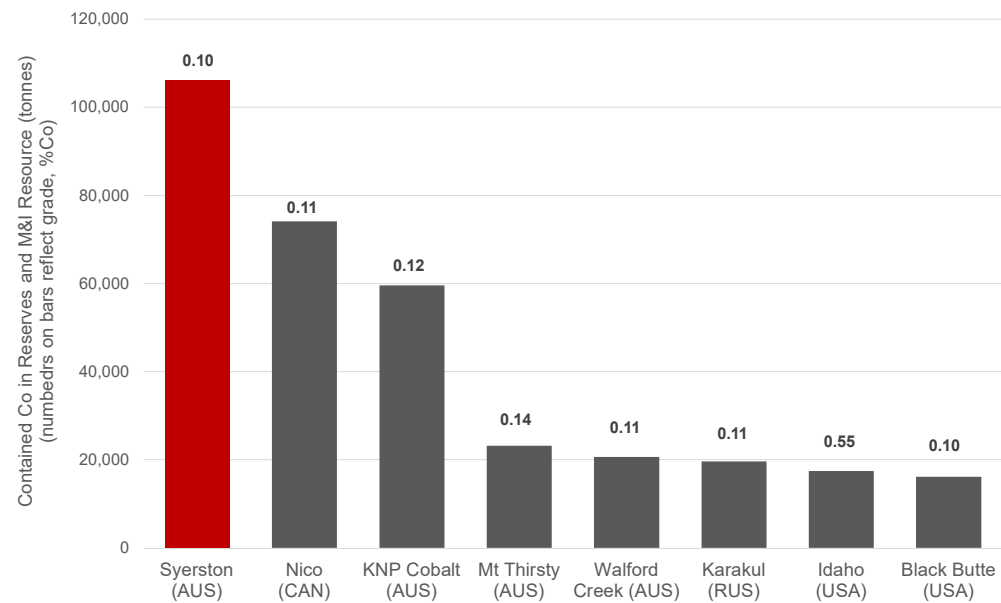
# COBALT PROJECTS

## SYERSTON – A PREMIER COBALT PROJECT OUTSIDE AFRICA

Syerston is a **globally significant cobalt resource**, in a listed vehicle, outside Africa

Sitting **near surface** in central New South Wales, surrounded by **good infrastructure** and with **major permits granted**, Syerston represents **one of the best exposures to cobalt in the market**

Undeveloped Global Cobalt Resources (excl Africa)



Source: SNL Global Mining Database (sample size = 660 projects). Resource figures are based on Measured and Indicated Resources (inclusive of Reserves) for undeveloped non-African projects held by listed companies. Seabed mining resources are excluded. To ensure materiality and relevance, projects with a Co grade of less than 0.10% and contained metal of less than 10kt are excluded. Note that in most cases, the economic viability of a project will be driven by the primary metal contained in the resource, not the cobalt.

# 2016 PREFEASIBILITY STUDY

## LARGE, LOW-COST AND WITH HIGH COBALT CREDITS

Parameter		Assumption / Output
Autoclave Throughput		2.5Mtpa <sup>1</sup>
Life of Mine		39 years
Initial operating period		20 years
Autoclave Feed Grade <sup>3</sup> (Year 3-20 average)	Nickel	0.80%
	Cobalt	0.14%
Production (Years 3-20 average)	Nickel sulphate	85,135tpa
	Cobalt sulphate	15,343tpa
Production (Years 3-20 average)	Contained nickel	18,730tpa
	Contained cobalt	3,222tpa
Recovery (Years 3-20 average)	Nickel	94.2%
	Cobalt	93.0%
Nickel price assumption <sup>3</sup>		US\$7.50/lb
Cobalt price assumption <sup>3</sup>		US\$12.00/lb
Exchange Rate		AUD/USD 0.75
Total Capital Cost <sup>4</sup>		US\$680M (A\$906M)
C1 Cash Cost (Year 3-20 average) <sup>5</sup>	before Co credits	US\$2.96/lb Ni
	after Co credits	US\$0.89/lb Ni
Net Present Value (NPV <sub>d</sub> ) – post tax <sup>6</sup>		US\$891M
Internal Rate of Return (IRR) – post tax		25%

<sup>1</sup> Designed processing throughput rate following a 24-month commissioning and ramp up period.

<sup>2</sup> Includes pit selection, dilution and mining factors

<sup>3</sup> Based on bank/broker long-term consensus market pricing for metal content only. Does not include premiums that are typically paid in the market for battery-grade nickel and cobalt sulphate

<sup>4</sup> Includes a US\$62M (A\$83M) contingency on capital costs

<sup>5</sup> C1 cash cost excludes potential by-product revenue from scandium oxide sales and royalties

<sup>6</sup> Post tax, 8% discount, 100% equity, real terms

# 26-28

GWh p.a.<sup>#</sup>

# 500,000

Electric Vehicles p.a.\*

Definitive Feasibility Study due for completion in Q4 2017

Significant scandium credits modelled separately

# Assumes NCA chemistry with Ni and Co content by wt% within cathode active material of 48% and 9% respectively, and energy density at 1.39kg/kWh

\* Assumes average energy density per battery pack of 50kWh

## Scandium – a case study

Airbus Group's Lightrider: the world's first 3D printed electric bike

Aluminum-scandium frame makes it lighter and stronger

The bike weighs 35kg, contains a 6kWh battery, has a top speed of 80km/h and a range of 60km

The most effective way to increase an EV's range and performance is to make it stronger and lighter



Syerston is uniquely positioned to benefit from and support the two key imperatives facing the global transport industry: **electrification and light weighting**



# NEXT STEPS



# PROJECT IS DEVELOPMENT READY

## KEY PERMITTING COMPLETED



### STUDIES

Prefeasibility Study completed, with Definitive Feasibility Study due for completion in Q4 2017



### INFRASTRUCTURE

All key infrastructure is available, including road and rail access



### EIS

Environmental Impact Statement completed and approved by Government



### POWER & GAS

Power and gas are within close proximity to the Project



### WATER

The Project has a 3.2GLpa water allocation granted by the NSW Government



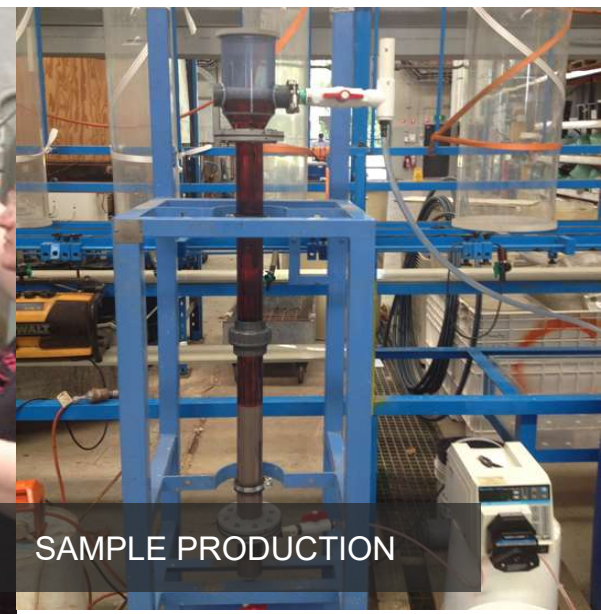
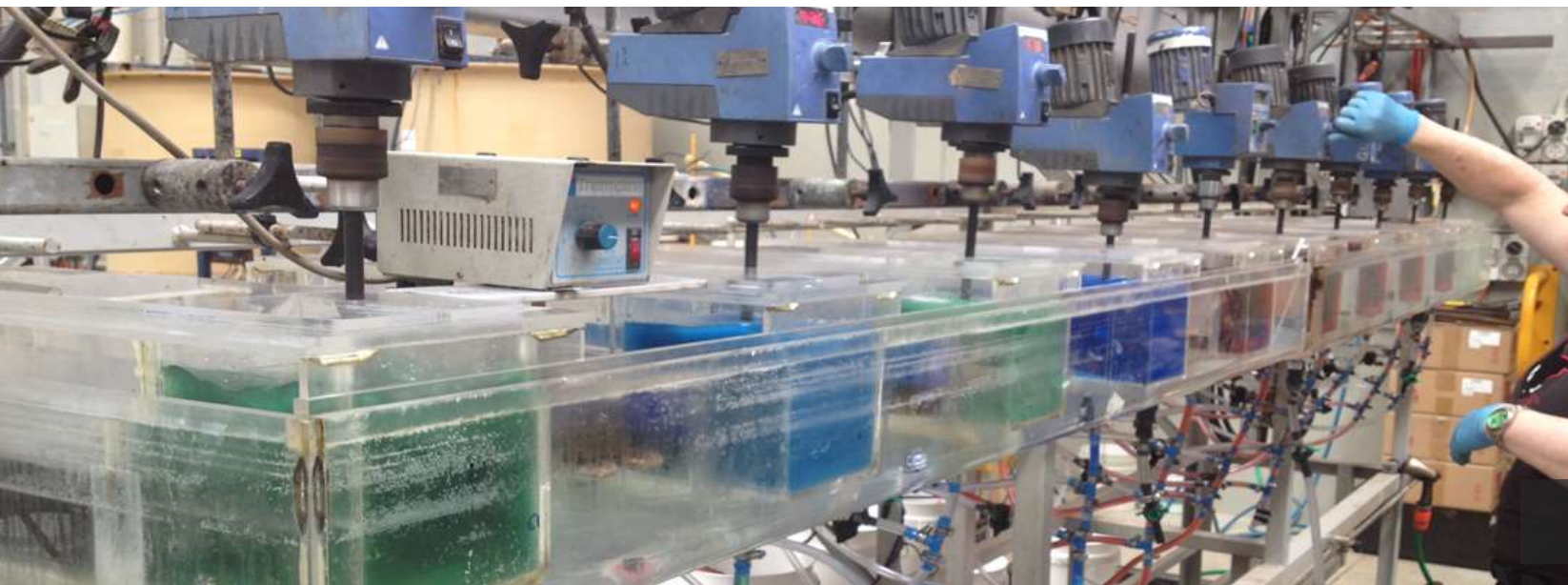
# SYERSTON

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## PILOT PLANT

Clean TeQ has a large scale pilot plant located in Perth, Western Australia to simulate the entire leaching and RIP extraction process at scale

A pilot campaign in 2016 processed ~50 tonnes of Syerston ore to produce nickel and cobalt sulphate samples for customer sampling and testing



SAMPLE PRODUCTION

# SYERSTON

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## PURIFICATION CIRCUIT

Good progress is being made on purification of nickel and cobalt eluate to battery-grade specification

Next steps are crystallisation and assays

# INVESTMENT TAKEAWAYS

Forty year  
mine life

One of the  
largest cobalt  
deposits  
outside Africa

Located in an  
established  
mining district  
in Australia

Significant  
scandium  
upside

Key  
permitting in  
place

# RESERVES AND RESOURCES

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## COMPETENT PERSON CONSENTS

The information in this document that relates to nickel-cobalt Mineral Resources is based on information compiled by Diederik Speijers and John McDonald, who are Fellows of The Australasian Institute of Mining & Metallurgy and employees of McDonald Speijers. There was no clear division of responsibility within the McDonald Speijers team in terms of the information that was prepared – Diederik Speijers and John McDonald are jointly responsible for the preparation of the Mineral Resource Estimate. Diederik Speijers and John McDonald have sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Diederik Speijers and John McDonald, who are consultants to the Company, consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

The information in this document that relates to scandium Mineral Resources is based on information compiled by Sharron Sylvester, who is a Member and Registered Professional of the Australian Institute of Geoscientists and is an employee of OreWin Pty Ltd. Sharron Sylvester has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity which she 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'. Sharron Sylvester, who is a consultant to the Company, consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.

The information in this document that relates to Ore Reserves is based on information compiled by Michael Ryan, MAusIMM (109558), who is a full time employee of Preston Valley Grove Pty Ltd, trading as Inmett Projects. Michael Ryan has sufficient experience that 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'. Michael Ryan, who is a consultant to the Company, consents to the inclusion in the report of the matters based on his information in the form and context in which it appears. Michael Ryan holds options in Clean TeQ Holdings Limited, the ultimate parent entity of Scandium21 Pty Ltd, the owner of the Project.

For further details on the content of this presentation, please refer to the ASX releases on the Company's website.

# CONTACT

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