



# BARRA RESOURCES LIMITED

RIU Explorers – February 2019

Sean Gregory | Managing Director & CEO



# KEY MESSAGES



## Mt Thirsty Pre-Feasibility Study underway

- Advanced, high grade, low capex, undervalued cobalt nickel project
- Mineral Resource upgraded today
- Leach extractions surge in PFS

## Dual commodity strategy in play with Coolgardie gold projects

- Burbanks – historical underground mines
- Phillips Find – historical open pit mines
- Ongoing drilling campaigns in 2019

***Projects all located in WA's stable and ethical goldfields***





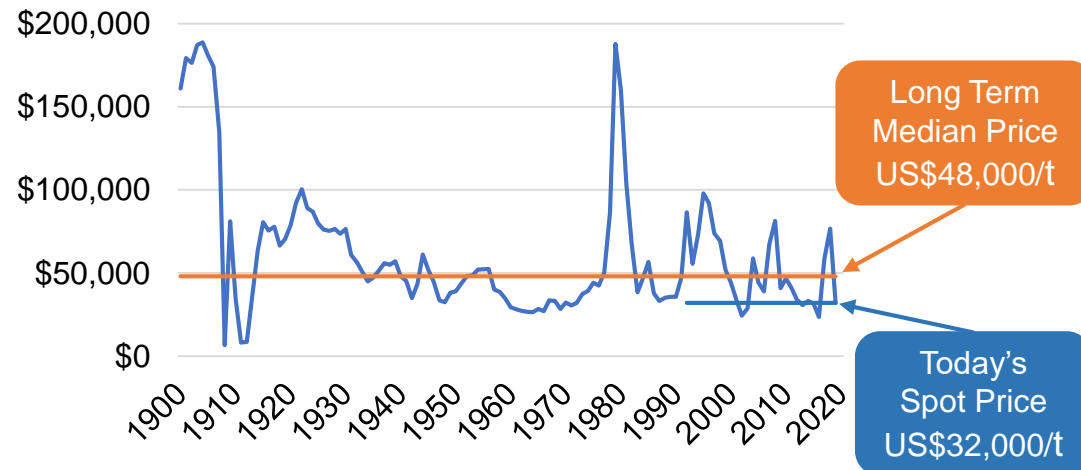
# COBALT PRICE

- Cobalt prices at historical low in real terms
- Project economics are driven by long term price not spot price
- Demand Growth and Supply Constraints ahead

Short Term Cobalt Price<sup>1</sup>  
(US\$/t)



Long Term Cobalt Price<sup>2</sup>  
(2019 US\$/t real)



<sup>1</sup> Trading Economics

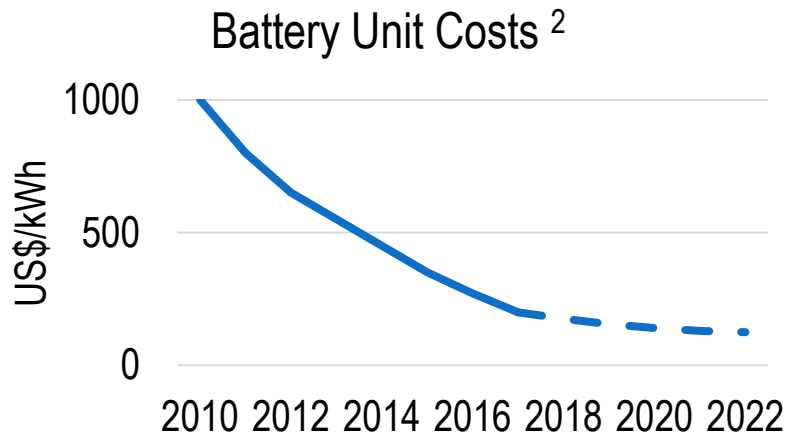
<sup>2</sup> US Geological Survey; escalated by US CPI



# ELECTRIC VEHICLES TECHNOLOGY DEVELOPMENT



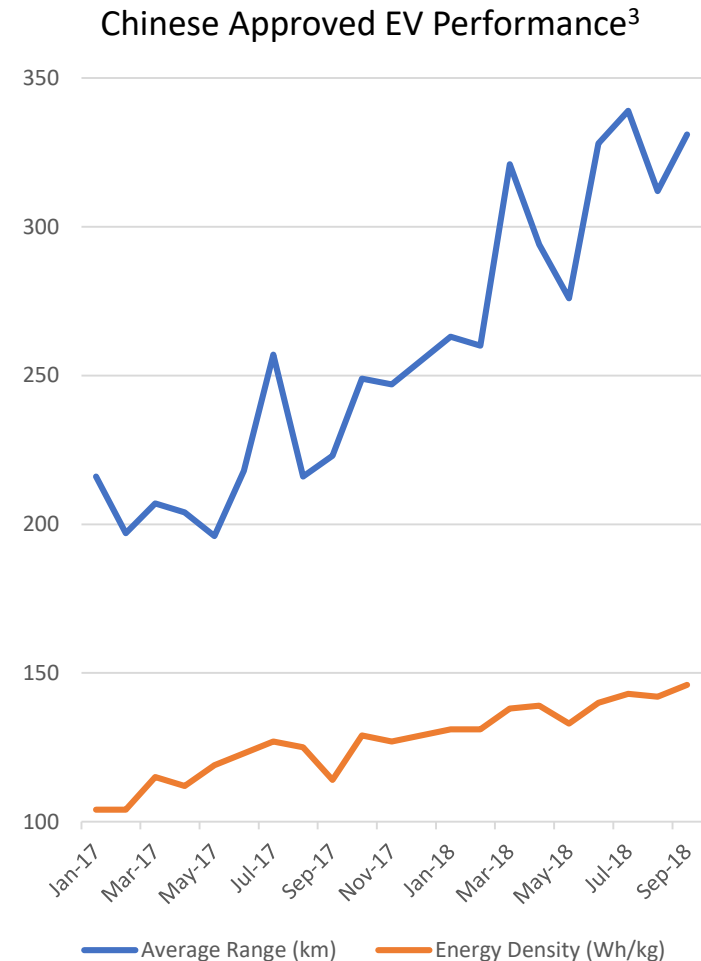
- Electric vehicles are already *cheaper* than petrol vehicles in USA, UK & Japan on a total cost of ownership basis and after subsidies<sup>1</sup>



<sup>1</sup> Palmer et al, 2018, Journal of Applied Energy v.209

<sup>2</sup> Bloomberg

<sup>3</sup> Galaxy Resources

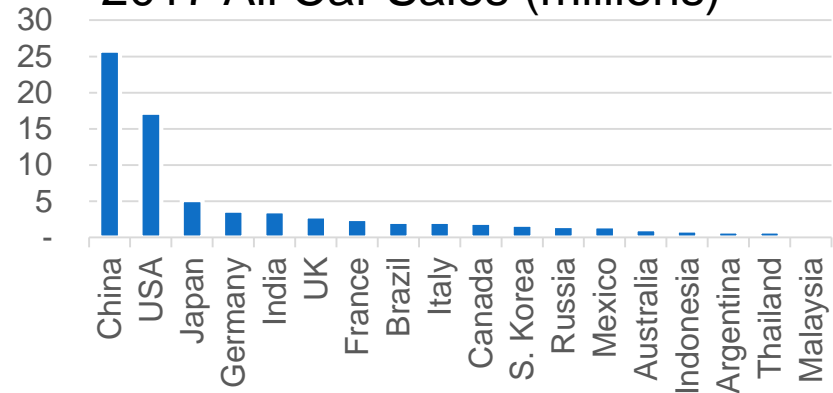


# ELECTRIC VEHICLES CHINA LEADING THE WAY



- China is the biggest and fastest growing car market
- Government mandated 12% EVs by 2020
- Brand names unfamiliar in western markets

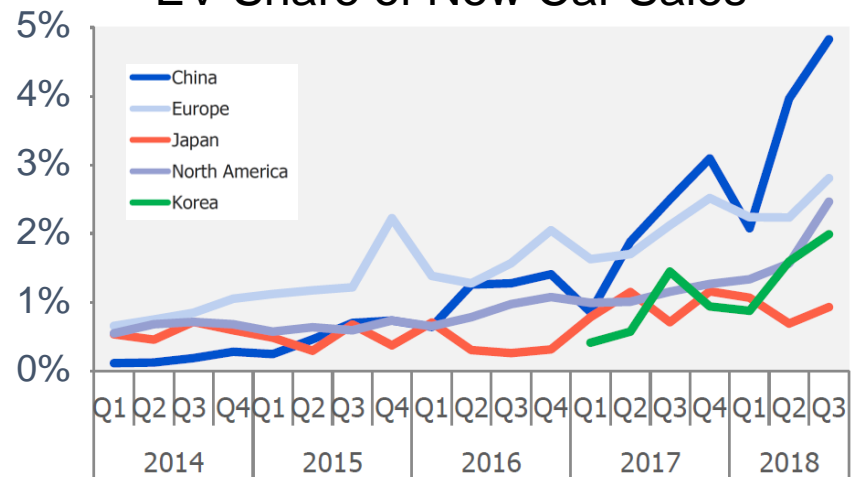
2017 All Car Sales (millions)<sup>2</sup>



Great Wall



EV Share of New Car Sales<sup>1</sup>



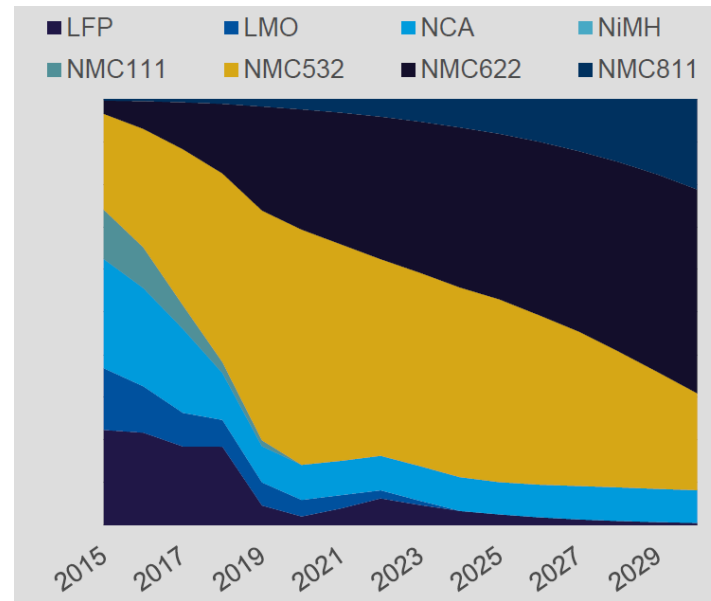
<sup>1</sup> Bloomberg

<sup>2</sup> Jato



# BATTERY CHEMISTRY REQUIRES COBALT

- Cobalt shortage will necessitate thriving to lower cobalt cathode chemistries
- Cobalt remains essential for thermal stability and energy density
- New technology adoption is slow (5-10 years)



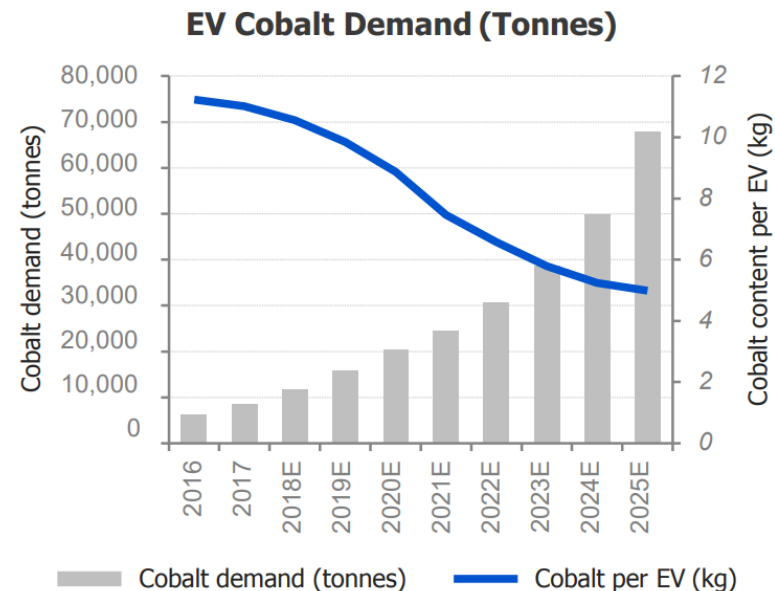
**LFP**  
Lithium Iron Phosphate

**LMO**  
Lithium Manganese Oxide

**NCA**  
Nickel-Cobalt-Aluminum

**NMC**  
Nickel-Manganese-Cobalt  
*(numbers denote relative proportions)*

**NiMH**  
Nickel-Metal-Hydride

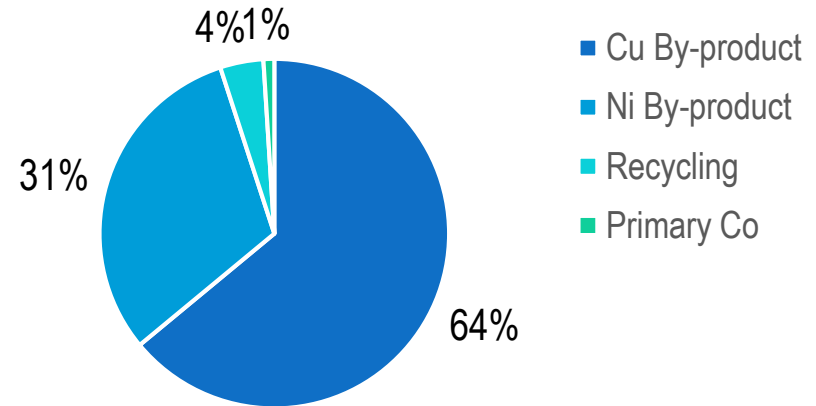




# COBALT SUPPLY SCARCE

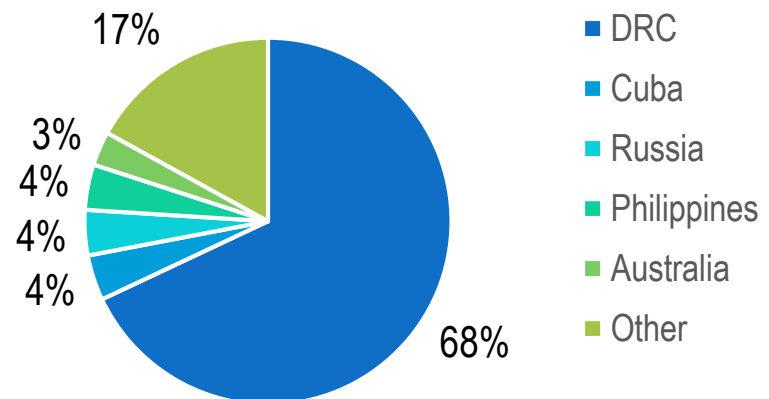
- 99% of cobalt is mined as a by-product
- Other new mines require higher Cu and Ni price
- HPAL capital cost is a barrier to entry for others
- 68% of cobalt sourced from DRC with sustainability concerns

2017 Global Mined Cobalt<sup>1</sup>



Global Cobalt Mine Production

2017 Total: 120 kt<sup>1</sup>

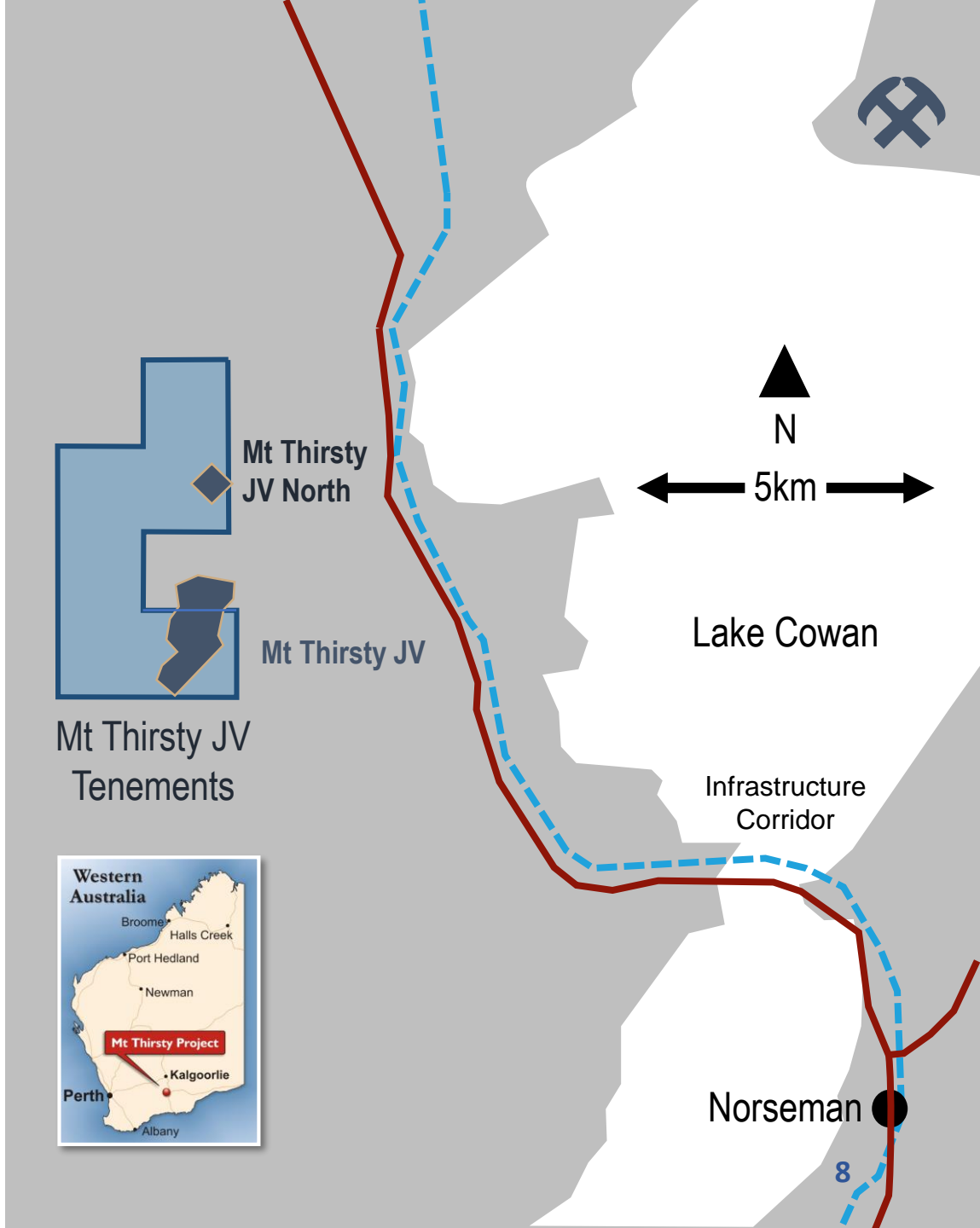


<sup>1</sup> Darton Commodities, CRU, Cobalt 27

# COBALT VALLEY

## REGIONAL DEVELOPMENT PLAY

- Project is only 16km NW from Norseman town
- Infrastructure all available locally
  - Road
  - Rail
  - Gas
  - Water
  - Town
  - Workforce
  - Fibre Optics
- 50/50 JV with Conico Ltd





# MT THIRSTY MINERAL RESOURCE UPGRADE

Mineral Resource	Wet Tonnes (Mt)	Dry Tonnes (Mt)	Co (dry %)	Ni (dry %)
Indicated	31.0	22.6	0.116	0.53
Inferred	3.5	2.6	0.099	0.44
Total	34.5	25.2	0.114	0.52

- Indicated Mineral Resource now represents 90% of the total Mineral Resource
- Indicated classification eligible for a JORC 2012 Ore Reserve estimate at the completion of a successful PFS
- Improved density, moisture, domaining and estimation methods<sup>1</sup>
- Further upside with known mineralisation at Mt Thirsty North<sup>2</sup>

<sup>1</sup> Refer to appendix for full details of the Mineral Resource

<sup>2</sup> Refer ASX:BAR announcement 29/5/17 for details on Mt Thirsty North mineralisation



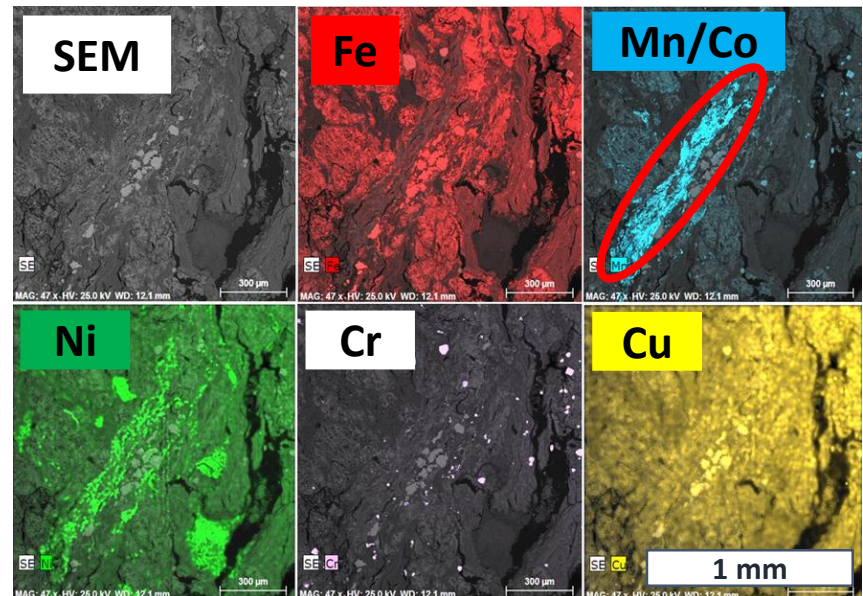


# MT THIRSTY CO-NI MINERALOGY



- Deep weathering has cobalt in asbolane mineral easily liberated by agitated atmospheric leaching
- Cobalt grade is double that of most nickel laterites
- Flat lying and low strip ratio (1.5:1)
- Soft and friable - minimal blasting and crushing

Cobalt in Mn Oxide - Asbolane



# MT THIRSTY ATMOSPHERIC LEACHING

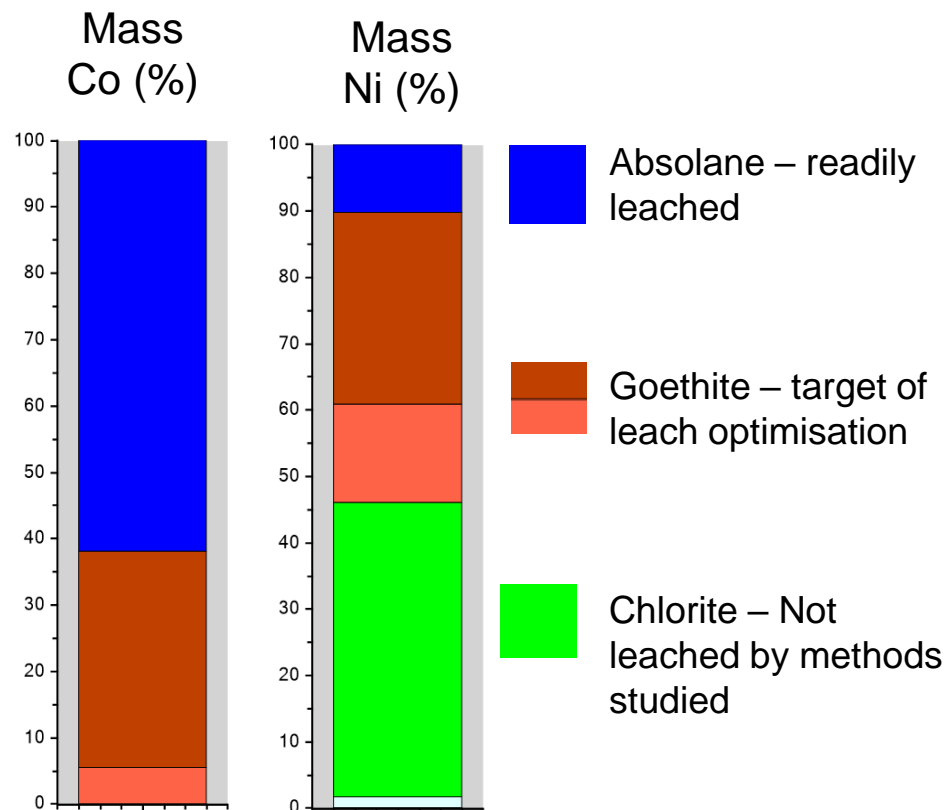


## Master Comp. Leach Extractions<sup>1</sup>

	Co (%)	Ni(%)
2019 PFS	85-88%	32-37%
2017 SS	79%	26%

- Extractions achieved using SO<sub>2</sub> as the main reagent without adding supplemental acid
- No need for losses from beneficiation
- Increased project revenues are expected to be available for minimal additional reagents and costs

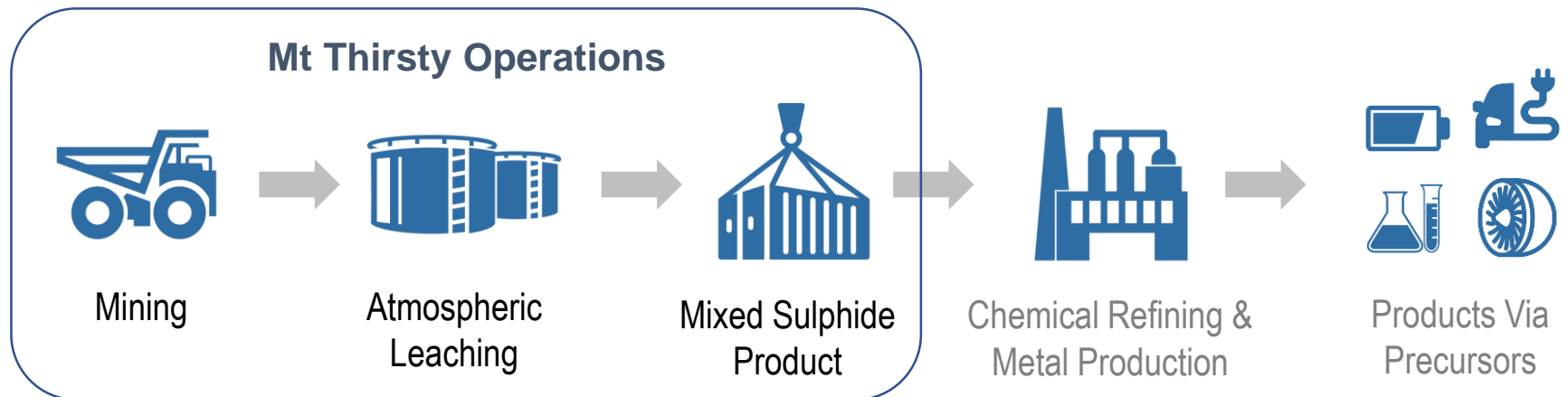
## QEMSCAN Mineral Department



<sup>1</sup>Recovery losses during neutralisation and precipitation have not been included. The Scoping Study losses were 4-6%; PFS targeting <4%. Refer to ASX Announcement 15/2/2019 for full details.

# PRODUCT VALUE CHAIN

- Mixed Sulphide Product (MSP) selected
- Suitable for metal, chemical and battery markets
- Product of strategic interest to many multinationals





# MT THIRSTY PRE-FEASIBILITY STUDY



- Permitting progression
  - Mining Lease application in place
  - Native Title negotiations initiated
  - Spring biological surveys complete; no rare flora or fauna
- Mine planning on new Mineral Resource with new metallurgy expected to unlock significant value
- Engineering to enable capital estimation to a PFS level of accuracy scheduled to commence subject to JV funding

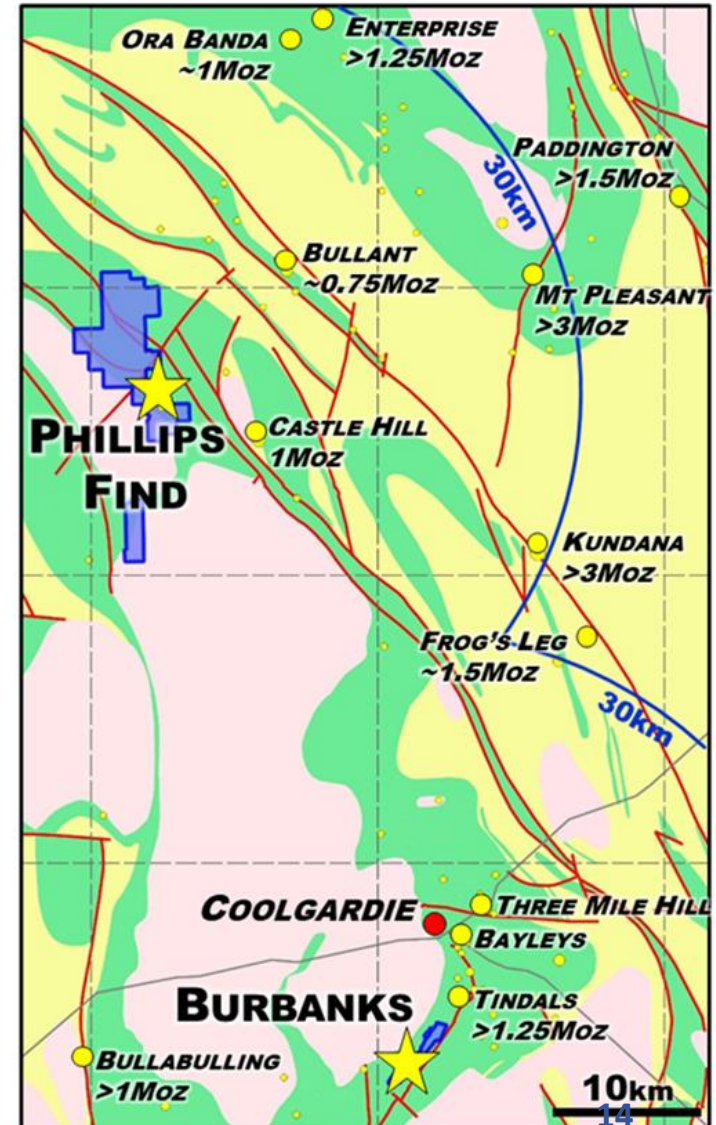




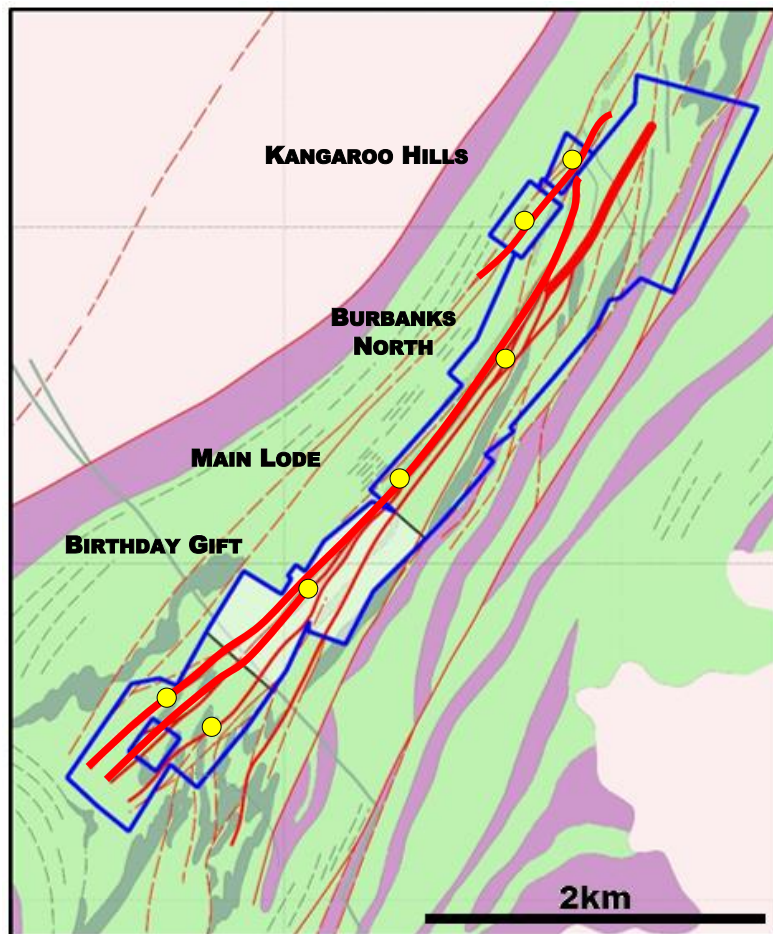
# COOLGARDIE GOLD PROJECTS



- Burbanks – historical high grade underground
- Phillips Find – historical open pit
- Multi-million ounce gold camps within 30km
- Aim to define critical mass of 500,000oz Au ahead of mining
- Regional consolidation occurring (e.g. ASX: NST-WGX, IRC-MRP-FML)



# BURBANKS – HIGH GRADE GOLD ENDOWMENT



## LEGEND

BARRA TENEMENTS

MINE / PROSPECT

MAFIC

MAGNETIC MAFIC

ULTRAMAFIC

GRANITOID

DYKE

KEY FAULT

FAULT

FAULT, INFERRED

# 420<sub>koz</sub>

Historical Production (Au)

# 125<sub>koz</sub>

Indicated and Inferred Mineral Resource (Au)

# 223–564<sub>koz</sub>

Exploration Target (Au)

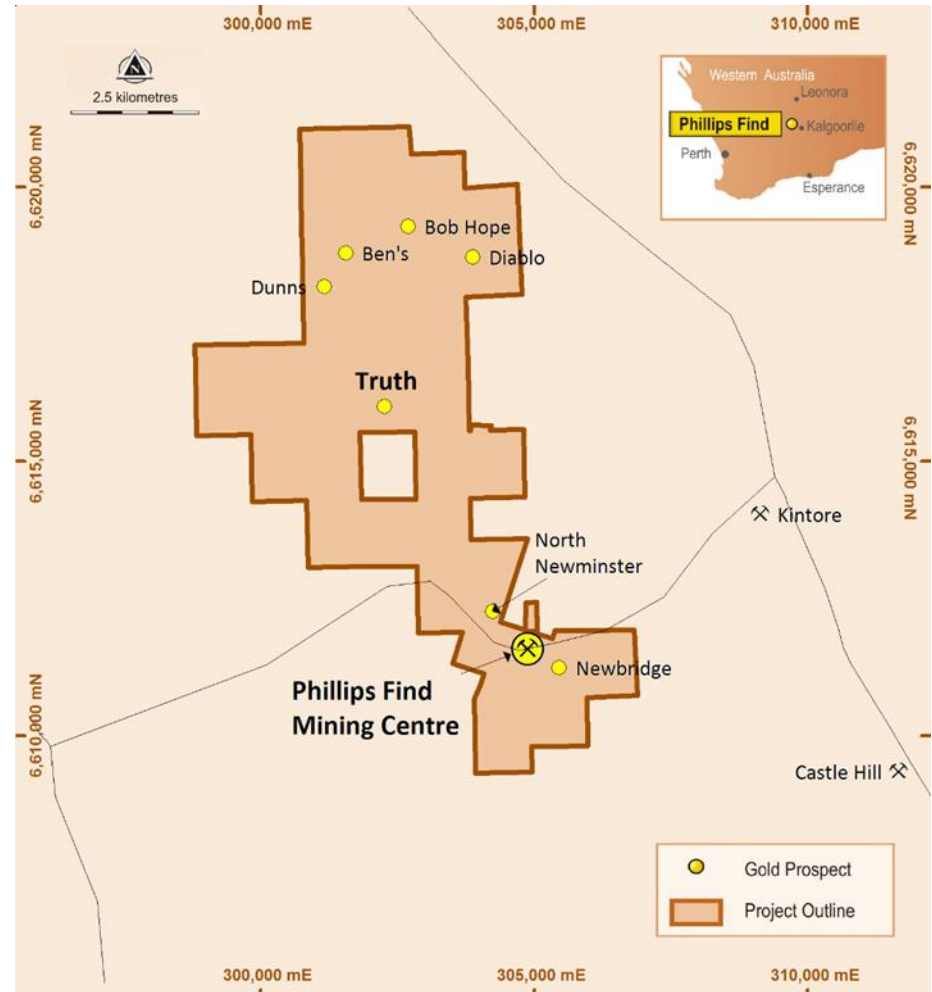
The potential quantity and grade of the Exploration Target is conceptual in nature as there has been insufficient exploration to estimate a Mineral Resource beyond Birthday Gift. It is uncertain if further exploration will result in an estimation of a Mineral Resource.

Refer to appendix for further details on Mineral Resource and Exploration Target.

# PHILLIPS FIND – GREENFIELDS POTENTIAL



- Successful mining campaigns in 3 open pits from 1995-2015 at Phillips Find Mining Centre (PFMC)
- Tenement package at an early stage of exploration away from PFMC
- Undercover drilling at Truth target identifies anomalous gold trends along strike PFMC
- Gold drilling campaigns to continue on Coolgardie projects throughout 2019







# THANK YOU

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# APPENDIX: JORC TABLES

Mineral Resource for Mt Thirsty											
Mineral Resource	Cut-off (Co%)	Wet Tonnes (Mt)	Moisture (% wet t)	Dry Tonnes (Mt)	Co (%)	Ni (%)	Mn (%)	Al (%)	Fe (%)	Mg (%)	Zn (ppm)
Indicated	0.06	31.0	27%	22.6	0.116	0.53	0.77	3.9	21.1	3.2	304
Inferred	0.06	3.5	27%	2.5	0.099	0.44	0.65	3.5	19.0	3.5	243
<b>Total</b>	0.06	34.5	27%	25.1	0.114	0.52	0.76	3.9	20.8	3.2	298

All grades reported on a dry basis. Refer to ASX:BAR announcement 20/2/2019 for full detail of the Mineral Resource.

Exploration Target for the Burbanks Gold Project						
Area	Low Range			High Range		
	Tonnes	Au g/t	Au Oz	Tonnes	Au g/t	Au Oz
Main Lode to Burbanks North Exploration Target	185,000	8.0	47,600	2,170,000	5.0	348,800
Birthday Gift Exploration Target	625,000	4.0	80,000	650,000	6.0	120,000
Birthday Gift Mineral Resource	514,700	5.8	95,400	514,700	5.8	95,400
<b>Total</b>			223,000			564,000

The potential quantity and grade of the Exploration Target is conceptual in nature as there has been insufficient exploration to estimate a Mineral Resource beyond Birthday Gift. It is uncertain if further exploration will result in an estimation of a Mineral Resource. Refer to ASX:BAR Announcement 21/3/18.

In Situ Mineral Resource for the Burbanks Gold Project										
Area	Cut-Off	Indicated			Inferred			Total		
		kt	Grade	Ounces	kt	Grade	Ounces	kt	Grade	Ounces
Christmas Open Pit	1.0	6	6.2	1,100	4	7.8	1,050	10	6.89	2,150
Birthday Gift Underground Mine	2.5	180	6.0	34,750	325	5.6	58,500	505	5.74	93,250
Main Lode Deposit	1.0	106	2.8	9,700	254	2.5	20,200	360	2.59	29,900
<b>Total Mineral Resource</b>	1.0/2.5	291	4.9	45,550	583	4.3	79,750	874	4.5	125,300

For full details of the Birthday Gift and Christmas Pit Mineral Resource refer to Kidman Resources Limited's ASX announcement 25/08/15 and then updated for mining depletion in Kidman's 2016 Annual Report. The information has not materially changed since then. For Main Lode Refer ASX:BAR 30/10/18.



# APPENDIX: CORPORATE OVERVIEW

## ASX:BAR

- 531M shares outstanding
- Market cap \$18.6m @ 3.5c
- Cash \$2.3M (1/1/19)
- Shareholders
  - FMR Investments Pty Ltd 15.4%
  - Mineral Resources Ltd 10.8%
  - >3000 other shareholders
- Experienced board and management
  - Sean Gregory, MD & CEO
  - Gary Berrell, Chairman
  - Grant Mooney, NED & Co Sec
  - Jon Young, NED
  - Gary Harvey, Exploration Manager



# DISCLAIMER & CP STATEMENTS

## **Competent Persons Statement**

*The information in this report which relates to Exploration Targets, Exploration Results and Mineral Resources for the Phillips Find and Burbanks Projects is based on and fairly represents information compiled by Mr Gary Harvey who is a Member of the Australian Institute of Geoscientists and a full-time employee of Barra Resources Ltd. Mr Harvey 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" (the JORC Code). Mr Harvey consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

*The information in this report which relates to Exploration Targets is based on information compiled by Mr. Allan Kneeshaw who is an independent consultant and is a Fellow of the Australian Institute of Geoscientists (FAIG) and a Fellow of the Australian Institute of Mining and Metallurgy. Mr. Kneeshaw 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. Kneeshaw consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

*The information in this report that relates to drilling, sampling and assay data is based on and fairly represents information compiled by Michael J Glasson, a Competent Person who is a member of the Australian Institute of Geoscientists. Mr Glasson is an employee of Tasman Resources Ltd and in this capacity acts as part time consultant to Conico Ltd and the MTJV. Mr Glasson holds shares in Conico Ltd. Mr Glasson has sufficient relevant experience to the style of mineralisation and type of deposits under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2012 Edition).*

*The information in this report which relates to Mineral Resources is based on information provided to and compiled by Mr David Reid, who is a full-time employee of Golder Associates Pty Ltd, and a Member of the Australasian Institute of Mining and Metallurgy. Mr Reid has sufficient relevant experience to the style of mineralisation and type of deposits under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code (2012 Edition).*

## **Birthday Gift Exploration Targets**

The information in this diagram that relates to the Birthday Gift Exploration Target has been extracted from Kidman Resources Limited's KDR:ASX Release dated 25/08/2015 "Initial 99,000oz Resource for Burbanks gold mine in WA", available to view at [www.kidmanresources.com.au](http://www.kidmanresources.com.au). The Company is not aware of any new information or data that materially affects the information included in the previous reports and that all the previous assumptions and technical parameters underpinning the estimates in Kidman's ASX Release dated 25/08/2015, have not materially changed. For full details of the Birthday Gift Mineral Resource, refer to Kidman's 2016 Annual Report.

## **Forward Looking Statements Disclaimer**

*This report contains forward-looking statements that involve a number of risks and uncertainties. These forward-looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information. Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this report. No obligation is assumed to update forward-looking statements if these beliefs, opinions and estimates should change or to reflect other future developments*