



# ASX QUARTERLY REPORT

## QUARTER ENDING 31 MARCH 2019

### ASX ANNOUNCEMENT

26<sup>th</sup> April 2019

### BARRA RESOURCES LIMITED

A.B.N. 76 093 396 859

### Corporate Details (Dec 31):

ASX Code: BAR  
 Market Cap: \$15.9M @ 3.0c  
 Cash: \$2.0M

### Issued Capital:

530.89M Ordinary Shares  
 38M Options

### Substantial Shareholders:

FMR Investments 15.4%  
 Mineral Resources Ltd 10.8%

### DIRECTORS

MD & CEO: Sean Gregory  
 Chairman: Gary Berrell  
 Non-Exec: Jon Young  
 Non-Exec: Grant Mooney

### PROJECTS

Mt Thirsty Co-Ni (50%)  
 Coolgardie Au (100%)

### CONTACT DETAILS

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 West Perth, WA 6005  
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### MT THIRSTY COBALT NICKEL PROJECT

- Leach optimisation test work identifies significant increases in cobalt and nickel extractions, improving project economics
- JORC 2012 Mineral Resource estimated for both Mt Thirsty Main and Mt Thirsty North Deposits:

	Mineral Resource	Dry Tonnes (Mdt)	Co (%)	Ni (%)
Mt Thirsty Main	Indicated	22.6	0.116	0.53
	Inferred	2.5	0.099	0.44
Mt Thirsty North	Inferred	1.5	0.092	0.55
<b>Total</b>	Ind. & Inf.	26.6	0.113	0.52

Table 1 – Mt Thirsty Mineral Resource Summary (0.06% Co cut off)<sup>1</sup>

- Bulk leach test work ongoing
- 3<sup>rd</sup> and final phase of the Pre-Feasibility Study is ready to commence subject to JV approval of work programs and budgets

### BURBANKS GOLD PROJECT

- 99 Air-core drill holes completed for 4,055m along Burbanks North Trend; results expected in current quarter
- Maiden JORC 2012 Mineral Resource estimate planned for Burbanks North Trend
- Hyper-spectral analysis at Main Lode identifies alteration plunges to be followed up with RC drilling

### PHILLIPS FIND GOLD PROJECT

- Truth Target drilling reported; interpretation of end of hole multi-element assays underway.
- Planning drilling to extend remnant mineralisation at the Phillips Find Mining Centre

### CORPORATE

- As at the end of the quarter, Barra has \$2.0M in cash
- Barra fully funded for its share of the Mt Thirsty PFS and ongoing gold exploration



Figure 1: Barra Project Location Plan

<sup>1</sup> Refer to ASX:BAR Announcements 4/3/19 and 12/4/19



## MT THIRSTY COBALT PROJECT

*(50% Barra, 50% Conico – Mt Thirsty Joint Venture, MTJV)*

The Mt Thirsty Cobalt Nickel Project is located 16km northwest of Norseman, Western Australia (Figures 1 & 2). The project is jointly owned by Barra Resources Limited (Barra, or the Company) and Conico Limited, together the Mt Thirsty Joint Venture (MTJV).

The Project contains the Mt Thirsty Cobalt-Nickel (Co-Ni) Oxide Deposit that has the potential to emerge as a significant cobalt producer.

The MTJV is progressing a Pre-Feasibility Study (PFS) on the project utilising industry leading consultants led by Amec Foster Wheeler Australia Pty Ltd, trading as Wood.

### ACTIVITIES

#### *Mineral Resource Upgrades*

The Mineral Resource estimates for the project were upgraded to JORC 2012 status during the quarter. Importantly, 90% of the main Mt Thirsty Mineral Resource is now classified as Indicated, which makes it eligible for Ore Reserve status at the successful completion of the PFS where all economic and other modifying factors will be considered.

A maiden Inferred Mineral Resource was also estimated for Mt Thirsty North, a small satellite deposit 3km to the north of the main deposit. Mt Thirsty North is expected to provide useful blending material towards the end of the main Mt Thirsty mine life, subject to further detailed studies.

The total Mineral Resource<sup>1</sup> now stands at 26.1Mdt @ 0.113% Co and 0.52% Ni as detailed in Table 1.

#### *Leaching Optimisation Test Work*

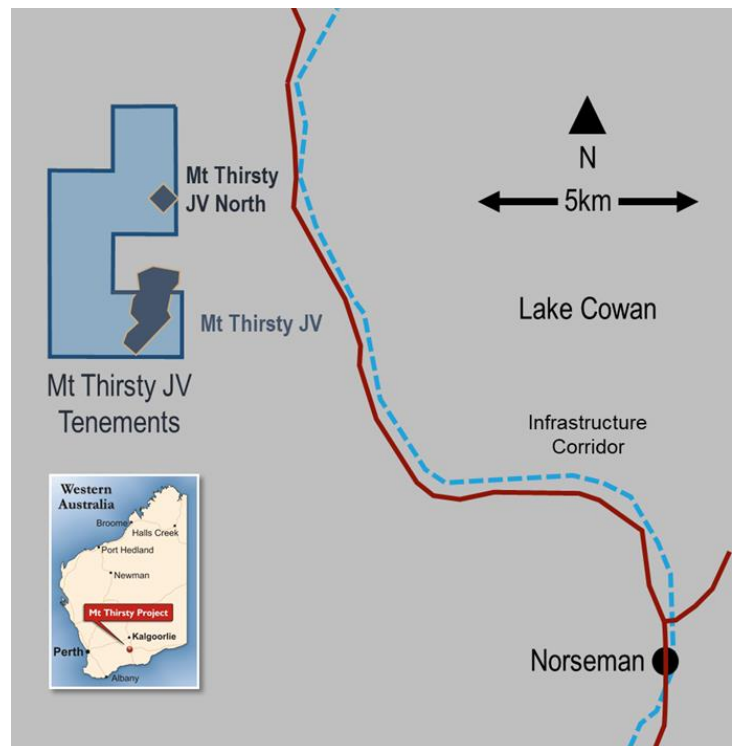
As announced during the quarter, metallurgical test work at ALS laboratories in Balcatta identified significant improvements in leach extractions<sup>2</sup>. Cobalt extractions were increased from 79% in the 2017 Scoping Study<sup>3</sup> to an average of 85%, with some results as high as 88%. Nickel extractions were increased from 26% to an average of 32% with some results as high as 37%.

The improvements are due to a greater understanding of the mineralogy and particularly that there are two key reactions taking place; an initial reductive leach targeting the manganese-oxide asbolane and a second acidic leach targeting the iron-oxide goethite. This knowledge allowed the conditions of the leach to be varied and optimised at different stages during the 16-30 hour leach duration. The extractions were achieved using modest quantities of SO<sub>2</sub> for leaching without requiring the addition of expensive supplemental acid.

Downstream losses during precipitation and neutralisation are targeted at 3-4%, another improvement against the 5-6% assumed in the scoping study.

Based on the significantly higher metal recoveries, commensurately higher project revenues are expected to be available for minimal additional reagents and costs.

Variability test work was also conducted; albeit at un-optimised Scoping Study conditions. This identified a correlation between feed-grade and recovery, consistent with the higher-grade samples being richer in the more easily leached asbolane mineral.



**Figure 2: Mt Thirsty Project Location Plan**

<sup>2</sup> Refer to ASX:BAR Announcement 15/2/19

<sup>3</sup> Refer to ASX:BAR Announcement 5/10/17



### ***Bulk Leaching Test Work***

Two bulk leach tests have recently been completed. The bulk leaches are nominally 20kg dry master composite samples, mixed up to 40% solids, i.e. 50kg wet. A third bulk leach test is now underway. The liquor solution from the bulk leaches will then be available for bulk downstream neutralisation and precipitation test work. Residues from the bulk leaches will also be available for tailings test work. This work will continue throughout the quarter with results announced when complete.

### ***Cobalt-Nickel Market***

The price for cobalt metal has corrected over the last 12 months from a high of US\$90,000/t in March 2018 to US\$35,000/t today. This has been due to short term supply exceeding demand as evident by LME warehouse levels which remain at high levels. The supply growth has been led by producers from the Democratic Republic of Congo, increasing their dominance of the market to above 70% and further exacerbating future supply shock risk.

Electric Vehicle (EV) sales are growing exponentially from a low base, particularly in China where EV sales accounted for 5% of all new vehicles in the most recent quarterly data, however the mass adoption of EVs is still ahead of us. When this inevitably occurs, supply growth will be unable to keep pace with demand. Hence the rampant speculation that saw the cobalt price unsustainably rise this time last year.

Substitution away from cobalt through the adoption of 811 cathode chemistry (8 parts nickel, 1 part manganese, 1 part cobalt) to displace 622 cathodes has proved more difficult than major battery manufacturers forecast. Even if this thrifting away from cobalt can be safely implemented, the demand growth is still forecast to significantly outstrip supply. The challenges of 811 highlight the difficulty of technological change disrupting the need for cobalt in batteries within any reasonable investment time frame.

Many commentators have now identified nickel as a commodity to watch during 2019. Nickel inventory levels halved from approximately 400,000t to 200,000t during 2018. Growth in use of stainless steel has been strong, and when the demand from the battery industry is overlaid, nickel demand is expected to outstrip supply.

Longer term, the fundamentals of the cobalt and nickel markets remain exceptional with very few high-quality projects such as Mt Thirsty being expected to be available to meet the demand driven by EVs.

### ***PFS Final Phase***

The final 3<sup>rd</sup> phase of the PFS is now ready to commence. The scope includes:

- Mine plan optimisation informed by the new Mineral Resource block model and metallurgical regressions from the latest test-work.
- Hydrogeological drilling to confirm the water source for the project.
- Tailings test work on residue samples from the bulk leaches; and
- PFS level engineering, capital and operating cost estimation.

The work program and budget for phase 3 is currently under consideration by the MTJV management committee.



## BURBANKS GOLD PROJECT

(100% Barra)

### ACTIVITIES

Barra's 100% owned Burbanks Gold Project is located just 9 km south of Coolgardie in Western Australia (Figure 3).

#### *Burbanks North Drilling*

Subsequent to the end of the quarter, the air-core drilling program along the Burbanks North trend was completed. 99 air core drill holes for 4,055m were drilled with assay results expected in current quarter.

The drilling followed up exceptional results recorded in 2016 and 2017 that identified a mineralised strike length of 350m at Burbanks North. Best results from the 2016<sup>4</sup> and 2017<sup>5</sup> programs included:

- BBAC038 15m @ 9.87 g/t Au from 12m incl 5m at 24.82 g/t and incl 1m @ 14.8 g/t
- BBAC055 8m @ 6.22 g/t Au from 13m incl 2m at 20.5 g/t
- BBAC092 9m @ 4.76 g/t Au from 11m incl 5m at 7.71 g/t
- BBAC013 4m @ 2.13 g/t Au from 10m and 2m @ 6.1 g/t from 19m and 5m @ 7.89 g/t from 25m
- BBAC091 6m @ 6.39 g/t Au from 9m incl. 3m @ 11.91 g/t
- BBAC042 1m @ 8.00 g/t Au from 10m and 1m 31.7g/t from 16m and 1m @ 1.27 g/t from 21m
- BBAC045 3m @ 9.94 g/t Au from 14m; and
- BBAC007 3m @ 9.48 g/t Au from 20m

The recent 2019 program aimed to test a further 650m of strike length along the Burbanks North trend for a total tested strike of 1000m, including through the Fangjau prospect where 2010<sup>6</sup> RC drilling yielded positive results including BBRC207 9m @ 2.81 g/t Au from 61m incl 5m @ 4.81 g/t Au.

Assays from the 2019 program will be announced during the current quarter.

Based on historical and pending 2019 results, Barra intends to move immediately to the estimation of a maiden JORC 2012 Mineral Resource for the Burbanks North Trend.

#### *Main Lode Alteration Study*

Following the highly successful 2018 RC drilling at the historical Main Lode Gold mine and estimation of a Mineral Resource, Barra submitted the sample chips for hyper-spectral logging using the HyLogger™ tool.

This technique analyses the samples with a high level of repeatability beyond the visual spectrum that the field geologist can see. Different minerals have distinctive spectral signatures that can be identified.

The study found strong associations between gold mineralisation and certain alteration minerals such as hornblende, chlorite, and biotite.

When ranked by their association with gold and plotted spatially, these mineral associations highlighted key trends that indicate moderate plunges of strongly altered rocks to both the north and south (Figure 4). These

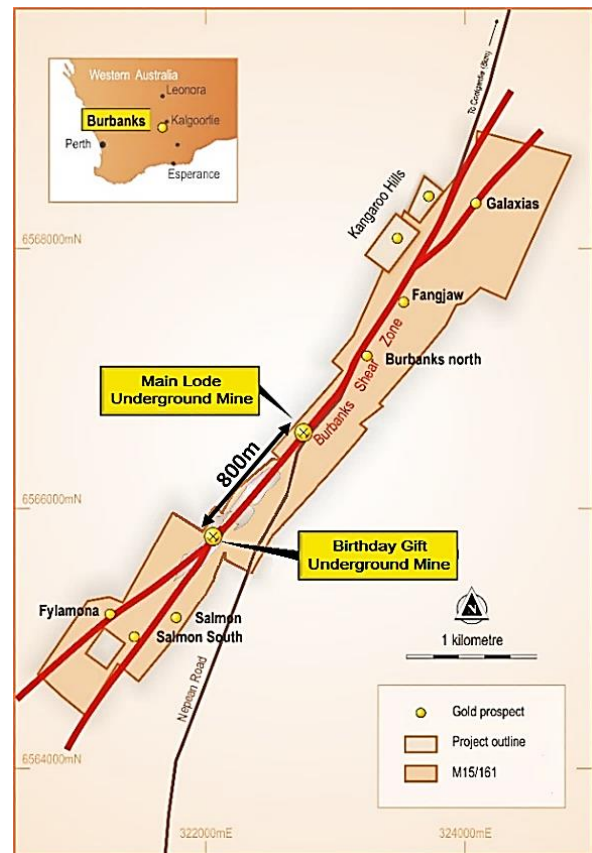


Figure 3: Burbanks Mine and Prospect Layout

<sup>4</sup> Refer to ASX:BAR Announcement 25/08/2016

<sup>5</sup> Refer to ASX:BAR Announcement 27/07/2017

<sup>6</sup> Refer to ASX:BAR Announcement 30/06/2010



trends align with Barra's accumulated structural geological knowledge of the area.

Some of the strongly altered rocks did not necessarily correspond with high-grade gold mineralisation, for example in the far north of the drilled extent where BBRC279 intersected sub 1g/t gold. However, the presence of strong alteration may suggest high-grade gold mineralisation may be located nearby.

In other areas, the alteration plunge trends provide key vectors to follow up possible down-plunge extensions of the known Mineral Resources.

Planning is underway for further RC drilling later in 2019 to test these new targets.

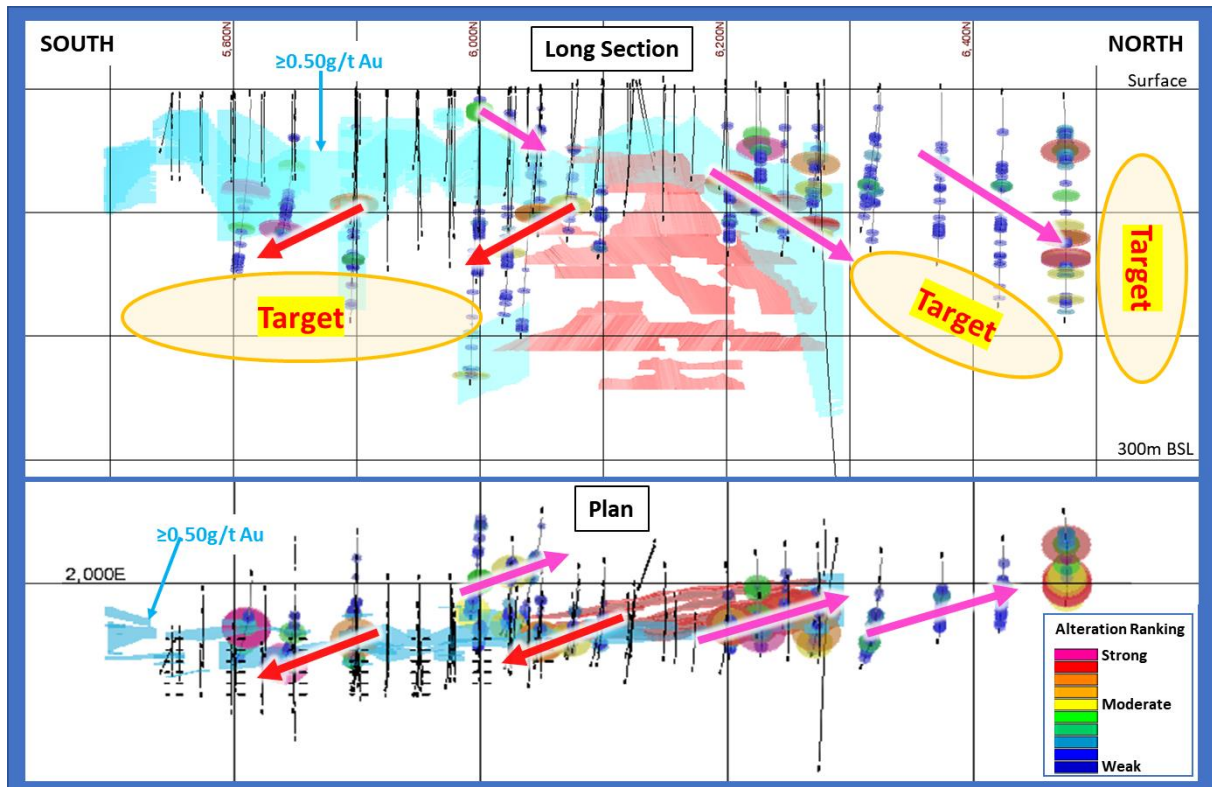


Figure 4 – Main Lode long section showing ranked alteration associations with gold.



## PHILLIPS FIND GOLD PROJECT

(100% Barra)

### ACTIVITIES

#### *First Pass Drilling of Truth Target*

In line with its gold strategy, Barra completed a first pass 338 hole, 9,669m Air Core (AC) drilling program at the Truth target area, within its Phillips Find Gold Project, 50km north of Coolgardie, Western Australia (Figure 5).

The AC drilling program, designed to be a broad spaced first pass test of the 6km x 1.5km Truth target area, successfully intersected multiple zones of low-level gold anomalism over the target area.

Better anomalous gold intersections (+0.10g/t Au) include<sup>7</sup>:

- 20m @ 0.90g/t Au including 4m @ 4.40 g/t Au
- 29m @ 0.49g/t Au including 4m @ 2.95 g/t Au
- 26m @ 0.30 g/t Au
- 33m @ 0.10 g/t Au
- 9m @ 0.32 g/t Au
- 4m @ 0.40 g/t Au
- 8m @ 0.19 g/t Au
- 5m @ 0.23 g/t Au
- 4m @ 0.17 g/t Au
- 3m @ 0.12 g/t Au, and
- 33m @ 0.10g/t Au

Several trends were defined parallel to and associated with weathered bedrock structures along the strike extension of the Phillips Find Mine Sequence geology. The Phillips Find Mine Sequence hosts three open-pit mines at the Phillips Find Mining Centre (PFMC), which has produced a combined 33,000oz of gold to-date. Several new targets have now been identified along strike of the PFMC which now require prioritisation before further follow-up infill AC drilling and testing for mineralisation at depth with reverse circulation (RC) drilling.

Prior to the drilling program the Truth target was defined by a convalescence of intense structural deformation interpreted by mapping and coincident multi-element auger geochemical anomalism both completed in 2017. The location of key lithostratigraphy and structural continuity was not known at a scale required to identify deeper drilling targets. The current work has provided this necessary resolution and provided visibility to the bedrock geology.

The broad spaced program was designed to penetrate only the regolith profile by drilling until blade refusal was encountered at the bedrock interface and test for gold dispersion bleeding off potentially mineralised bedrock structures. In this regard, the program exceeded the Company's expectations with several broad zones of low-level gold anomalism encountered and associated with deeply weathered structures and favourable PFMC Mine Sequence geology.

In contrast to the PFMC however where the gold deposits daylighted at surface, most of the Truth target area

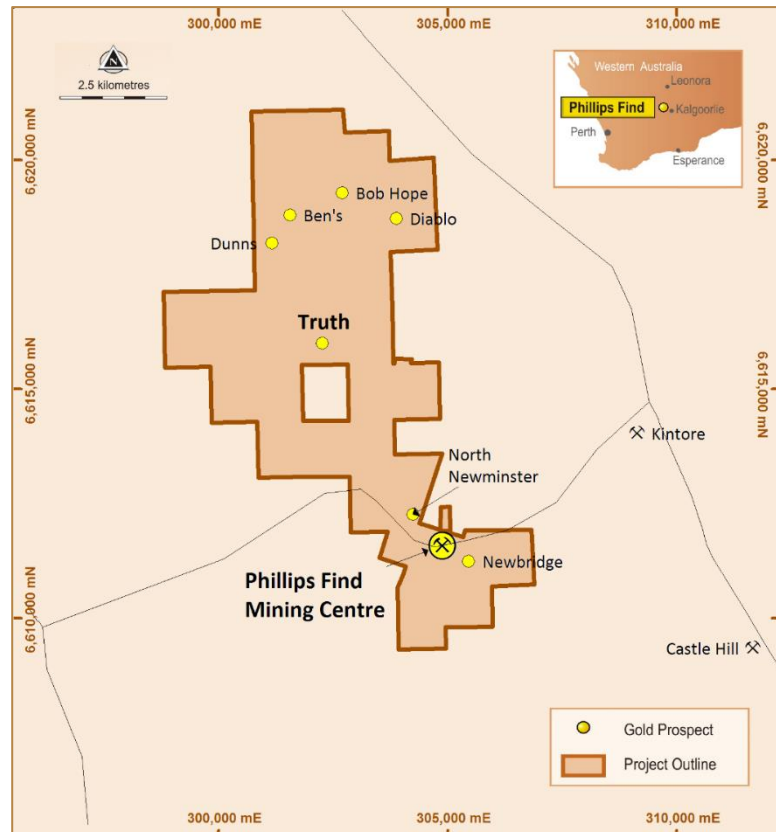


Figure 5: Phillips Find Project location map

<sup>7</sup> Refer to ASX:BAR Announcement 17/01/2019



is obscured by recent alluvial cover and weathering up to 50m depth. Another exciting outcome of the program is that a high proportion of gold anomalism encountered was located beneath recent multi-element auger geochemical anomalism in deeply weathered regolith, and in areas not previously drilled.

Multi-element analysis of the end of hole samples were received during the quarter. Further interpretation and analysis is planned in the current quarter.

After this analysis, further AC drill programs will be designed to infill around prioritised targets as well as deeper RC holes targeting mineralised structures at depth.

### ***Phillips Find Mining Centre***

Barra is also preparing an RC drilling program to build on remnant mineralisation at the Newhaven and Newminster open pits. Further details will be provided ahead of the drilling programs.

## **CORPORATE**

As at the end of the quarter, Barra has \$2.0m in cash to fund it's 50% share of the Pre-Feasibility Study (PFS) for the Mt Thirsty Cobalt-Nickel Oxide Project as well as ongoing exploration and drilling at the Company's Burbanks and Phillips Find Gold projects.

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**SEAN GREGORY**

Managing Director & CEO

***PLEASE REFER TO OUR RECENTLY UPDATED WEBSITE FOR BACKGROUND INFORMATION ON EACH OF BARRA'S PROJECTS.***

## **DISCLAIMER**

*The interpretations and conclusions reached in this report are based on current geological theory and the best evidence available to the authors at the time of writing. It is the nature of all scientific conclusions that they are founded on an assessment of probabilities and, however high these probabilities might be, they make no claim for complete certainty. Any economic decisions that might be taken based on interpretations or conclusions contained in this report will therefore carry an element of risk.*

*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.*



## COMPETENT PERSONS' STATEMENTS

*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 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). 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 that relates to Exploration Results for the Mt Thirsty project 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 at Mt Thirsty is based on information provided to and compiled by Mr David Reid, a Competent Person 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).*

*The company is not aware of any new information or data that materially affects the information presented and that the material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified from the original market announcements.*

## APPENDIX 1 - ASX ANNOUNCEMENTS DURING THE QUARTER

Date	Announcement
12 April, 2019	<a href="#">Mt Thirsty North Maiden Mineral Resource</a>
8 April, 2019	<a href="#">Burbanks North Drilling Underway (Amended)</a>
21 March, 2019	<a href="#">Informa Minerals &amp; Investment Week Conference Presentation)</a>
4 March, 2019	<a href="#">Mt Thirsty Mineral Resource Upgrade (Amended)</a>
20 February, 2019	<a href="#">RIU Explorers Conference 2019 Presentation</a>
15 February, 2019	<a href="#">Extractions Surge in Mt Thirsty Testwork</a>
17 January, 2019	<a href="#">Phillips Find Drilling Results</a>





## APPENDIX 2 – TENEMENT LISTING

There were no tenement changes during the quarter.

Tenement	Project	Location	Change in Interest (%) during Quarter		
			End of Quarter	Acquired	Disposed
E63/1267	Mt Thirsty	WA	50		
E63/1790		WA	50		
P16/2045		WA	50		
R63/4		WA	50		
M15/161	Burbanks	WA	100		
P15/5249		WA	100		
P15/5412		WA	100		
M16/130	Phillips Find	WA	100		
M16/133		WA	100		
M16/168		WA	100		
M16/171		WA	100		
M16/242		WA	100		
M16/258		WA	100		
M16/550		WA	100		
P16/2702		WA	100		
P16/2785		WA	100		
P16/2786		WA	100		
P16/2985		WA	100		
P16/2986		WA	100		
P16/2987		WA	100		
P16/2988		WA	100		
P16/2989		WA	100		
P16/2990		WA	100		
P16/2991		WA	100		
P16/2992		WA	100		
P16/2998		WA	100		
P16/2999		WA	100		
P16/3037		WA	100		
P16/3038		WA	100		
P16/3039		WA	100		
P16/3040		WA	100		
P16/3041		WA	100		
P16/3042		WA	100		
P16/3043		WA	100		