## **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



Gindalbie Metals Limited ("Gindalbie" or "the Company") has completed a Preliminary Mine Scoping Study Update ("Study Update") on the Indicated copper-cobalt-silver Resources at the Mt Gunson Copper-Cobalt Project in South Australia. The Company has the right to acquire up to 75% of the Mt Gunson Assets by way of a farm-in structure.

The Study Update was an important phase in the farm-in, allowing Gindalbie to address key areas of uncertainty in the project, primarily related to the conceptual flow-sheet.

The Study Update provides a strong basis to formally enter Stage 2 of the farm-in and to progress into a Pre-feasibility Study.



## **Highlights**

- The board of Gindalbie has approved the entry by the Company into Stage 2 of the Mt Gunson Copper-Cobalt Project. The Company will now progress the Project to a Pre-feasibility Study (PFS) level of confidence.
- The Windabout and MG14 deposits contain significant copper, cobalt and silver mineralisation with total Indicated Mineral Resources of:
  - 1.83Mt at 1.24% Cu, 334ppm Co and 14g/t Ag at MG14; and
  - 17.67Mt at 0.77% Cu, 492ppm Co and 8g/t Ag at Windabout reported at a cut-off grade of 0.5% Cu equivalent.
- The results of the preliminary testwork support the further evaluation of a conventional flotation-based circuit as a base case producing split copper and cobalt rich concentrates from both MG14 and Windabout.
- Stage 1 of a mining study has identified a preliminary base case utilising conventional truck and shovel for the mining of both MG14 and Windabout.
- An initial Concept Study on the Emmie Bluff Cu-Co-Ag prospect on the northern boundary of the Project tenements has resulted in a strong case to progress studies on Emmie Bluff.

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# **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



## Approval to Enter Stage 2 of the Mt Gunson Copper-Cobalt Project Farm-in

### Background

In April 2017, Gindalbie entered into a Farm-in and Joint Venture Agreement ("Agreement") with Terrace Mining Pty Ltd, a wholly owned subsidiary of Torrens Mining Limited. The Agreement provides Gindalbie the opportunity to earn up to 75% interest in the Mt Gunson Copper-Cobalt Project, located 135km north-west of Port Augusta in South Australia. (Please see announcement on 17<sup>th</sup> April 2017 for more details of the farm-in structure.)

The proposed farm-in structure represents an opportunity for Gindalbie to gain a low-cost entry to an area, which currently includes two JORC 2012 Indicated copper-cobalt-silver Mineral Resources, a historical non-JORC compliant resource and over 800 square kilometres of prospective exploration tenements in one of the world's premier copper belts.

### The Mt Gunson Copper-Cobalt Project

The Project is centred approximately 35km south-east of the town of Woomera and 135km north-west of Port Augusta in South Australia. The tenement package comprises three exploration licenses, currently totalling 824 square kilometres of ground in one of the world's premier copper belts.

The Project is extremely well served for infrastructure being centred 100km south of BHP Billiton's world-class Olympic Dam copper-gold-uranium mine and within 50km of Oz Minerals' Carrapateena copper project, with access to existing road, power and water infrastructure.

The Project has a long history of exploration, including feasibility studies which were suspended due to metallurgical considerations in a low copper and cobalt price environment. Funds during Stage 1 of the farm-in have been primarily directed towards building on previous scoping study pilot work undertaken by Terrace and to confirm the flow sheet design to be taken forward into feasibility studies.



JORC 2012 Resource tables at 0.5% cut-off grade

MG-14 Resource [1]								
	Mt	Cu %	Co %	Ag g/t	CuEq %			
Indicated	1.83	1.24	0.03	14	1.67			
Inferred	-	-	-	-	-			
Total	1.83	1.24	0.03	14	1.67			
Windabout Resource [2]								
Williamout Resource								
	Mt	Cu %	Co %	Ag g/t	CuEq %			
Indicated	Mt 17.67	Cu % 0.77	Co % 0.05	Ag g/t	CuEq % 1.41			
Indicated Inferred				0.0				
				8				

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# **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



#### Farm-in Process

		Scoping Study update		Ownership earned		
		Flowsheet base case	_	250/		
Stage 1	<b>V</b>	Mining options base case		25%		
	Completion imminent	Exploration review & targeting programme	August 2018	On expenditure of \$1.37m		
		Pre-Feasibility Study		Ownership earned		
		MG-14 and Windabout PFS	_	T10/		
Stage 2	<b>V</b>	Emmie Bluff continued evaluation	_	<i>51%</i>		
	Decision to commence	Regional exploration programme	2019	On expenditure of \$2.5m		
		Feasibility Study		Ownership earned		
	_	Final project definition	_	700/		
Stage 3	_	PFS to BFS stage	_	/0%		
	Pending Stage 2	Investment decision	tbc	On expenditure of \$2.75m		
		Additional options/inclusions		Ownership earned		
0.1	_	• Option to purchase a further 5% of the project for \$1.50m on completion of Stage 3	_	75%		
Other		• If a Decision to Mine is not reached on total expenditure of \$6.62m, Torrens is free-		15/0		
	Pending Stage 3	carried up to \$8.62m – after which they will be liable for their share of expenditure		On exercise of option for \$1.5m		

NB: Expenditure commitments noted above relate to commercial expenditure and project ownership milestones within the farm-in structure and are not necessarily reflective of study budgets or expected study timeframes.

#### Farm-in Process Update

The Mt Gunson Copper-Cobalt Project Farm-in process officially commenced on  $19^{th}$  May 2017 following satisfaction of all conditions precedent for the Agreement.

During Stage 1 of the Farm-in, Gindalbie committed to spend A\$ 1.37M on studies at the Project to earn a 25% interest in the Mt Gunson Assets. The staged nature of the Farm-in provides Gindalbie with clear decision points during the progression of studies to maximise effectiveness and reduce risk to the Company.

Under the terms of the Agreement, Gindalbie must notify Terrace Mining by 18<sup>th</sup> June 2018 if it wishes to proceed into Stage 2 of the Farm-in whereby the Company commits to spend A\$ 2.5 million in return for a total 51% interest in the Mt Gunson Assets.

Following the decision by the Gindalbie board, the Company has officially notified Terrace Mining of its intention to proceed into Stage 2 of the Farm-in.

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## **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



#### Variation Deed

The Company has executed a Variation Deed with Terrace Mining to extend the deadline for the expenditure of the Stage 1 Earning Obligation (A\$ 1.37M) from 19<sup>th</sup> May 2018 to 19<sup>th</sup> August 2018. The Variation Deed was required due to a budget underspend during Stage 1 of the Farm-in resulting from strong budget control and better than expected results from initial metallurgical testwork resulting in the early conclusion of Stage 1 laboratory tests.

At the current time, the Company expects to fulfil earning obligations for Stage 1 in late July or early August 2018 and will make an announcement to market at the appropriate time. The Variation Deed presents no additional commercial risk and is simply due to cost controls during Stage 1 resulting in the underspend. A bridging programme between Stage 1 and the start of pre-feasibility studies is underway utilising available budget from Stage 1.

#### Novation Deed

Gindalbie Metals has incorporated a wholly owned subsidiary, Kobalamin Ltd to hold its interests in the Mt Gunson Assets. The parties have executed a Novation Deed to reflect the updated corporate structure under which Gindalbie's interests in the Agreement will be novated to Kobalamin, subject to the satisfaction of certain conditions (including Foreign Investment Review Board approval).

## Mt Gunson Copper-Cobalt Project Scoping Study Update

### Background

The primary objective of Stage 1 of the Farm-in at Mt Gunson was to address areas of critical uncertainty identified during a scoping study previously undertaken by Torrens Mining. The areas for initial update work identified during due-diligence work were:

#### Resource Confidence

- Update the Windabout deposit to JORC 2012 compliant standards and undertake additional confirmation and quality control drilling at MG14

#### Processing and flowsheet

- Identify a technically and potentially commercially viable flowsheet or flowsheets for progression to PFS

#### Mining Study

- Identify preferred technically and commercially viable mining method(s) for progression to PFS

#### Emmie Bluff Prospect

- Review the technical and economic case to progress studies on Emmie Bluff Cu-Co-Ag prospect

#### Regional Exploration

- Undertake independent geological review of the prospectivity of the tenements and to commence an exploration targeting campaign as appropriate

Please see below for a more detailed update relating to the above focus areas.

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## **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



## **Resource Update**

In September 2017, Gindalbie and Torrens drilled 34 holes for a total 368 metres of HQ3 sized metallurgical core at the MG14 and Windabout deposits. Although the drilling campaign was primarily to obtain samples for metallurgical testwork, the drilling also enabled the Company to update the Mineral Resources according to the guidelines of the 2012 edition of the JORC Code.

The Mineral Resource estimates for the Windabout and MG14 Deposits are tabulated below.

### Indicated Mineral Resources - Windabout and MG14 Deposits

Cu Eq > 0.5% cut off				Cu Eq > 1.0% cut off					
Mt	Cu %	Co ppm	Ag g/t	Cu Eq %	Mt	Cu %	Co ppm	Ag g/t	Cu Eq %
17.67	0.77	492	8	1.41	11.86	0.95	599	10	1.73

Table 1: Windabout Indicated Resource

	Cu Eq > 0.5% cut off				Cu Eq > 1.0% cut off				
Mt	Cu %	Co ppm	Ag g/t	Cu Eq %	Mt	Cu %	Co ppm	Ag g/t	Cu Eq %
1.8	1.24	334	14	1.67	1.59	1.33	360	15	1.80

Table 2: MG14 Indicated Resource

Source: Mt Gunson Project Mineral Resource Estimate, January 2018

Tonnes have been rounded. Discrepancies in totals may exist due to rounding.

Cu equivalent has been calculated from Cu and Co metal selling prices, recoveries and other assumptions contained in the appendices of the announcement made on  $19^{th}$  January 2018.

Please refer to the announcement on 19<sup>th</sup> January 2018 for detailed JORC compliance information.

### **Processing and Flowsheet**

Following the drilling campaign in September 2017 where the Company obtained approximately 400kg of fresh mineralised core samples, the Company appointed Strategic Metallurgy Pty Ltd to undertake detailed metallurgical testwork including preliminary flowsheet design.

The metallurgical testwork undertaken included sample preparation, de-sliming testwork, multi-stage flotation testwork and optimisation phases. The testwork has now been completed with the results being used to inform internal reporting and decision support for ongoing testwork programme design.

### Processing flowsheet options:

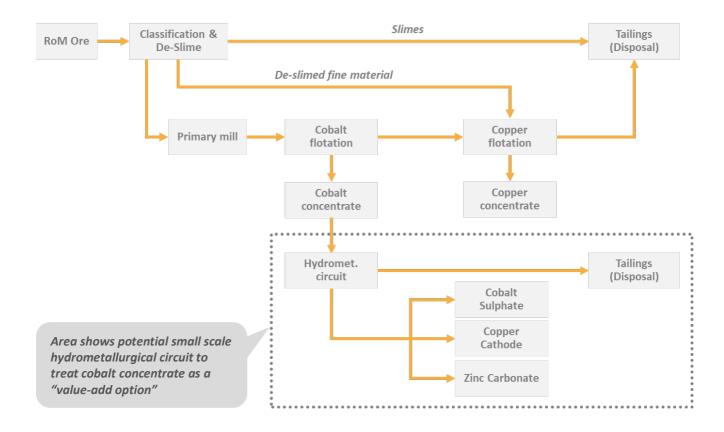
The preliminary testwork results support continued evaluation of the potential for a conventional flotation-based circuit to produce either a bulk copper-cobalt concentrate or split copper and cobalt concentrates from both MG14 and Windabout. During Stage 1 a detailed metallurgical options review was undertaken, including a review of all previous work. The use of GlyLeach™ glycine technology remains an option, especially at MG14 and may potentially offer a fast start-up, low capex option for project development. A testwork programme is ongoing with results expected in the second half of 2018.

The base case conceptual flowsheet to be taken forward into the pre-feasibility study is shown in below:

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# **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**





The base case to be taken forward into the PFS is for continued evaluation of a conventional flotation-based flowsheet to produce separate copper and cobalt concentrates.

The Company plans to drill for core samples early in Stage 2 to obtain bulk samples for continued metallurgical testwork which will focus on refinement of the currently contemplated flowsheet. Ongoing studies during PFS will evaluate this flowsheet option for both technical and commercial viability.

### Hydrometallurgical Circuit Option

The base case flowsheet aims to result in the production of two separate concentrate streams, one high-copper, low cobalt and one high-cobalt, low-copper. This is based on an initial high-level marketing study and seeks to optimise the saleability of concentrates.

The Company is also investigating the potential to add a small, separate hydrometallurgical circuit to the flowsheet to treat the cobalt concentrate stream. Subject to further studies, this has the potential to provide a significant "value-add" opportunity by producing separate cobalt sulphate and copper cathode products from the concentrate. This option may be attractive due to the relatively high-value and low-mass cobalt concentrate which would only need a very small-scale plant, thereby reducing likely capex requirements. It is envisaged that the separate copper concentrate stream would be sold directly as a concentrate product. Preliminary testwork indicates that the copper concentrate stream also contains a small proportion of cobalt and silver which, subject to marketing study work during early PFS, may further enhance the value of the concentrate.

Ongoing studies during PFS will evaluate this option for both technical and commercial viability.

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## **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



## **Mining Options Study**

A conceptual mining options study undertaken by mining and metallurgical consultants Mining & Process Solutions (MPS) has been completed. The study focused on pit shell evaluations, based on the updated Indicated Mineral Resources for the MG14 and Windabout deposits, to determine potential mining methods. It should be noted that although the study was undertaken on recently updated, JORC 2012 Indicated level Resources, at the current time, no Ore Reserve has been determined and there cannot be certainty that the conclusions of the Study Update will be realised or that an economic case will be demonstrated.

Selecting a suitable mining method has formed a key part of the mining options study with a focus being the identification of a base-case mining option. The study has identified a preliminary base case using conventional truck and shovel for the mining of both MG14 and Windabout.

Based on the study, MPS has been retained during Stage 2 to undertake a work package to deliver more detailed mining cost analysis through early contractor engagement. Following the completion of this package of work, stage 2 of the mining options study will focus on various value engineering opportunities including scheduling of early higher-grade material at Windabout as well as more detailed analysis of alternatives to the base case.

## **Emmie Bluff Prospect**

MPS has completed an initial concept study to assess the Emmie Bluff Cu-Co-Ag prospect, located on the northern part of the tenements. It should be noted that the study was based on historic drilling data and a historic Resource estimate which is not compliant with JORC 2012 standards.

The study focused on the technical and economic potential of the development of the Emmie Bluff prospect. The initial concept study provides a strong case to advance study work on Emmie Bluff. It should however, also be noted that although the study has been undertaken with care and at a significant level of detail, the study was based on historical, non-JORC compliant resource estimates and given the low level of geological confidence in the resource estimates, there cannot be any certainty that the currently contemplated work will result in an economic mining case or a JORC 2012 compliant Resource.

The Company will now advance work on Emmie Bluff to address key risk areas initially with a study to assess existing core samples held in the South Australia Drill Core Reference Library. Based on the assessment, and subject to board approvals, a drilling programme will be developed to obtain fresh core samples to assess geotechnical and mineralogical characteristics of the rock. Drilling programmes are currently being designed for a staged approach to initially obtain material for testwork and to then raise the level of geological confidence to JORC 2012 standards.

The Company will make further announcements to the market regarding Emmie Bluff at the appropriate time.

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## **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



## **Exploration and Resource Development**

In addition to the existing copper-cobalt resources at Mt Gunson, the project includes over 800km<sup>2</sup> of tenements considered highly prospective for copper and cobalt. A major exploration targeting campaign is underway across the tenement package to assess the potential for both additional sedimentary hosted mineralisation and deeper iron oxide copper gold (IOCG) mineralisation.

Two distinct types of copper mineralisation have been previously discovered within the Mt Gunson Project tenements:

- 1. Sediment-hosted copper-cobalt mineralisation in the undeformed Proterozoic Cover Sequence rocks of the Stuart Shelf (Cover Sequence mineralisation)
- 2. Olympic Dam-style, Iron Oxide Copper Gold (IOCG) mineralisation in the underlying metamorphosed rocks of the Gawler Craton (Basement mineralisation)

The Mt Gunson Cover Sequence copper-cobalt-silver deposits occur as discrete, stratiform, tabular bodies in the relatively undeformed cover sequence rocks of the Stuart Shelf, while IOCG-style mineralisation occurs in the older, deformed and altered basement rocks, associated with large and intense iron-rich alteration zones emanating from Hiltaba Suite Granites and other highly deformed igneous rock of Early Proterozoic and Archaean age.

The Cover Sequence mineralisation is the immediate target for the Company because of the potential for development of the two neighbouring JORC 2012 Indicated copper-cobalt deposits, MG14 and Windabout. Where appropriate, the Company will also assess the potential for deeper IOCG mineralisation during exploration targeting programmes.

The South Australian Government, in partnership with Geoscience Australia, has recently completed a high-resolution airborne geophysical and terrain imaging programme over the Mt Gunson tenements, the results of which were released on 19<sup>th</sup> April 2018.

Gindalbie has appointed respected geological consultants International Geoscience Pty Ltd to undertake a detailed review of the magnetic, radiometric and elevation data gained by this programme as well as current and historic project data. The initial programme is expected to be completed in the current quarter and aims to generate new targets for exploration on the tenement package.

## Copper and Cobalt Commentary

#### Copper market commentary

Over the previous twelve months the copper market has continued a strong price recovery since the lows of early 2016. This trend is forecast to continue into the medium to long term as the copper market enters a transition phase from supply surplus to supply deficit in the 2017-19 period.

Many forecasters have stated that this deficit is expected to worsen over the coming decade which has prompted mining majors the world over to re-direct exploration and capital expenditure towards copper as a long-term strategic market. However, in the context of major changes in energy transmission and storage, this may well be too little, too late.

The global copper supply chain faces major issues that continue to inhibit full capacity production and output growth. Most notably, these supply chain issues include ongoing labour strikes in jurisdictions where major suppliers operate (such as South America, Indonesia and Africa), as well as declining reserve grades globally, thereby increasing

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production costs. In terms of future supply growth, according to Vanessa Davidson, Director of Copper Research at CRU<sup>1</sup>, only eight new major projects are expected online by 2021, two of which are replacement production.

In conjunction with structural supply flaws, an increasingly positive sentiment in the global economy, driven by stronger US economic growth in recent times, is creating higher infrastructure spending and economic development. Furthermore, as the world shifts toward a sustainable energy future, electric vehicles (EV) are forecast to become the largest demand growth segment for copper. According to CRU<sup>2</sup>, at current EV copper utilisation rates a 30% EV market penetration would generate an additional 4.1 million tonnes per annum of copper demand.

Given the economic dynamics of the copper market strong and sustained prices are expected to remain for at least the short to medium term.

### Cobalt market commentary

The cobalt market has also seen an extremely strong price resurgence over the course of 2017-18. Since January 2017 the price has almost tripled to over US\$ 90,000t, driven by a tightly balanced market in 2016-17 transitioning into a supply deficit in 2018 and beyond.

Cobalt's use as a fundamental part of lithium-ion battery technology has driven spot prices far higher than previously forecast. Furthermore, as the rapid development in energy storage technology has progressed over the previous year an increasing level of scrutiny is being placed on the supply chain ethics of cobalt.

The Australian Financial Review <sup>3</sup> recently stated in an article that over half of the world's cobalt supply is dependent on a single, high sovereign risk country, the Democratic Republic of Congo (DRC). However, inclusive in this is an artisanal mining sector which may account for up to 20% of the DRC's annual output. This has prompted a global rush from mining and battery manufacture companies alike to source and lock down cobalt supply from mining friendly low sovereign risk jurisdictions where the supply chain can be audited and guaranteed.

Although cobalt's structurally flawed and opaque supply chain has been highlighted in recent times, the metal's relevance to the world's energy storage future has only deepened in light of EV demand. International commodity research house Roskill<sup>4</sup> have said that EV battery demand alone is forecast to be double the current cobalt market size of 120,000tpa reaching 240,000tpa by 2027.

Cobalt's market dynamics are likely to establish a sustained supply deficit in the short to medium term. This is in turn is forecast to sustain strong prices, which could potentially rise further in line with a deepening supply shortage.

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<sup>&</sup>lt;sup>1</sup> Mining News: Only Way is Up for Copper: CRU. 05 April 2017 http://www.miningnews.net/copper-news/news/1254932/copper-cru

<sup>&</sup>lt;sup>2</sup> ibid

<sup>&</sup>lt;sup>3</sup> Australian Financial Review: If you thought lithium was exciting, try cobalt. 10 April 2017

http://www.afr.com/business/mining/if-you-thought-lithium-was-exciting-try-cobalt-20170410-gvi7t0. The property of the prope

<sup>&</sup>lt;sup>4</sup> Mining News Premium: More capacity needed in cobalt sector. 15 May 2018

http://www.miningnews.net/research/news/1338276/more-capacity-needed-in-cobalt-sector and the sector of the sect

## **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



## **Appendix 1**

### **Cautionary Statement**

The Scoping Study Update referred to in this announcement has been undertaken in order to address certain areas of critical uncertainty arising following a Scoping Study previously undertaken by a third party. It is a preliminary technical and economic study of the potential viability of the Mt Gunson Copper-Cobalt Project. It is based on low level technical and economic assessments that are not sufficient to support the estimation of ore reserves. Further exploration and evaluation work and appropriate studies are required before Gindalbie Metals Ltd will be in a position to estimate any ore reserves or to provide any assurance of an economic development case.

The Scoping Study is based on the material assumptions outlined in the above update. These include assumptions about the availability of funding. At the current time no capital estimate has been provided, however, to achieve the outcome of development of the project investors should note additional funding will be required and that there is no certainty that Gindalbie Metals will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Gindalbie's existing shares.

It is also possible that Gindalbie could pursue other 'value realisation' strategies such as a sale, partial sale or joint venture of the project. If it does, this could materially reduce Gindalbie's proportionate ownership of the project.

While Gindalbie Metals considers all of the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Scoping Study will be achieved. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Scoping Study.

### COMPETENT PERSON AND JORC CODE

This report was prepared in accordance with the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' ("JORC Code") by Tim Callaghan, who is a Member of the Australian Institute of Mining and Metallurgy ("AusIMM"), has a minimum of five years' experience in the estimation and assessment and evaluation of Mineral Resources of this style and is the competent Person as defined in the JORC Code. This announcement accurately summarises and fairly reports his estimations and he has consented to the resource report in the form and context that it appears.

#### FORWARD LOOKING STATEMENTS

Some statements in this report regarding estimates or future events are forward-looking statements. They involve risk and uncertainties that could cause actual results to differ from estimated results. Forward looking statements include but are not limited to, statements concerning the Company's exploration program, outlook, target sizes and mineralised material estimates. They include statements preceded by words such as "expected", "planned", "target", "scheduled", "intends", "potential", "prospective" and similar expressions.

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# **Entry into Stage 2 of the Mt Gunson Copper Cobalt Project**



**ENDS** 

On behalf of:

Mr Keith Jones

Chairman

Ms Rebecca Moylan

Chief Financial Officer and Company Secretary

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