

10 April 2019

New Mutooroo Scoping Study Seeks to Enhance Economics

HIGHLIGHTS

- **New scoping study will investigate a higher throughput, initially copper only, option for the Mutooroo Project (Stage 1 work program).**
- **Specific focus on lowering project risk with a lower capital requirement while enhancing project economics.**
- **Relies on new exploration discovering additional shallow open pit copper-cobalt resources within trucking distance in the surrounding Mutooroo Copper-Cobalt district.**
- **Longer term value will be sought from viable cobalt recovery options and evaluation of underground development potential (Stage 2 work program).**

Havilah Resources Limited (Havilah) is pleased to advise that work has commenced on a new scoping study for the Mutooroo Project (**Mutooroo**), with the aim of developing Mutooroo initially as a higher throughput copper only operation. This strategic rationale is based on internal modeling and option analysis that demonstrates Mutooroo project economics are enhanced significantly if plant throughput and mine life can be increased (see slides 31 – 38 in the [CEO Update at the 2018 AGM](#)). This approach can also reduce project risk by maximising the benefit from conventional processing methods and relatively low capital input to produce a copper concentrate.

Key to this strategy is the discovery of additional shallow copper-cobalt resources located in the surrounding highly prospective Mutooroo Copper-Cobalt District, within trucking distance of the existing Mutooroo resource.

Later stages of the program will seek to realise the potential value of cobalt contained in the Mutooroo ore as well as investigate the viability and potential value of transitioning to an underground mining operation (see summary of the planned staged work program in **Table 1**).

Table 1 – Mutooroo Staged Work Program

Phase	Deliverable	Objective
Stage 1 (Cu only)	Scoping study	<ul style="list-style-type: none"> Discover additional copper mineralisation in support of higher throughput and longer mine life operation. Deliver scoping study using a processing strategy established from existing metallurgical results.
	PFS (prefeasibility study)	<ul style="list-style-type: none"> Define new JORC status copper resources and conceptual mine design. Demonstrate project economics for higher throughput and longer mine life with updated metallurgy program and line of sight to cobalt stream and underground potential.
	Permitting	<ul style="list-style-type: none"> Mining Lease approval and PEPR (Program for Environment Protection and Rehabilitation) to enable construction to commence for a copper only operation.
Stage 2 (Cu-Co)	PFS update	<ul style="list-style-type: none"> Unlock cobalt potential through full investigation of recovery options. Investigate viability of transition to underground mining (see Figure 1).
	Permitting	<ul style="list-style-type: none"> PEPR update to allow for recovery and sale of cobalt from iron sulphide concentrate.

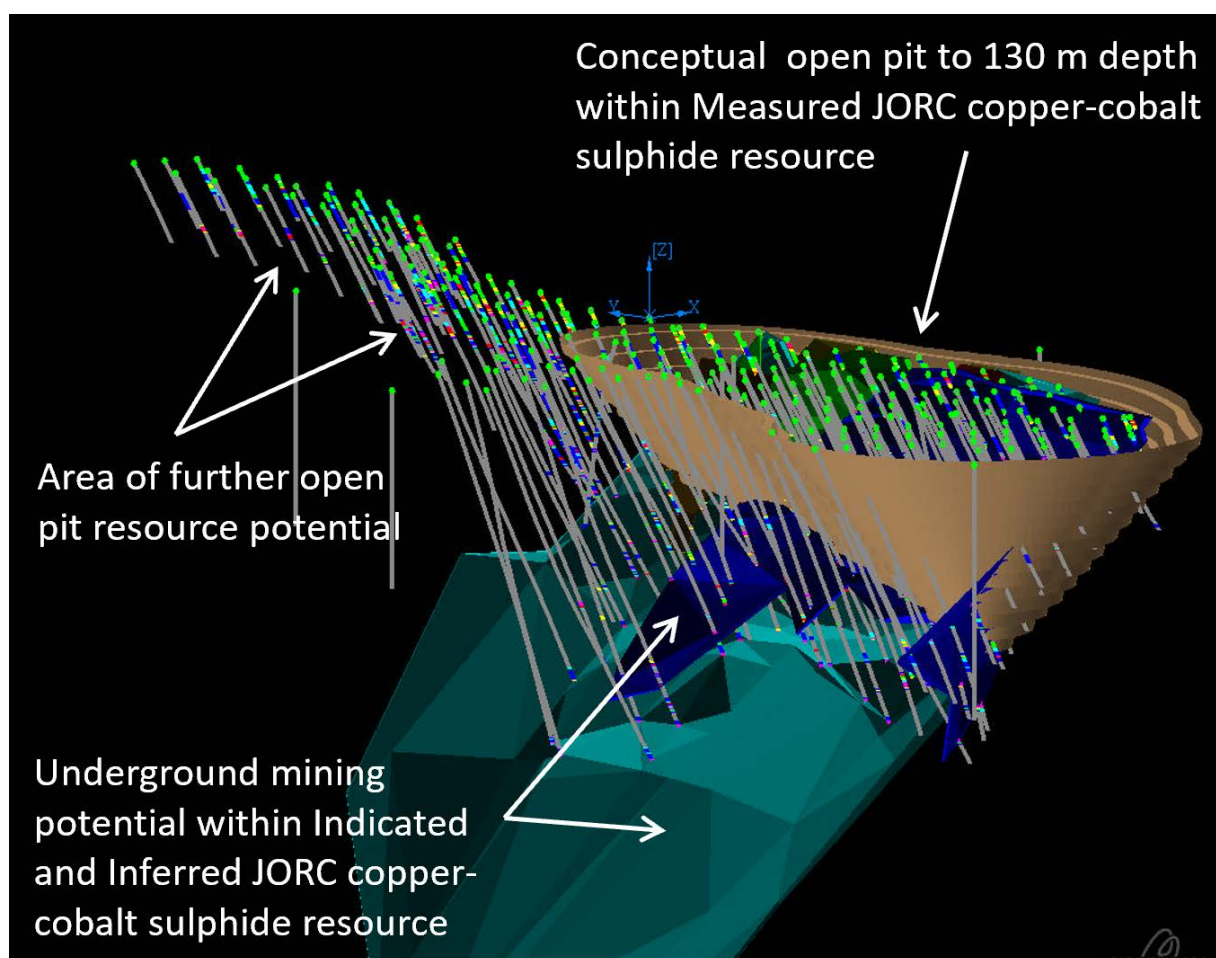


Figure 1 – 3D view of Mutooroo sulphide resource envelopes.

Stage 1 Exploration

The objective of Stage 1 exploration is to define additional shallow copper-cobalt resources within trucking distance of Mutooroo that can be mined as open pits in order to support the planned higher ore processing throughput. Drill target generation will be initially aided by a new 266 km² [detailed airborne electromagnetic \(AEM\) survey](#) that is designed to cover:

- The Mutooroo deposit and possible extensions both north and south and nearby parallel lode systems.
- Existing known prospects at Scorpion and King Brown.
- Newly defined [copper-cobalt prospects from surface geochemical sampling](#) in 2018 including Sidewinder and Copperhead (see **Figure 2**), as well as the broader region, not previously surveyed.

The AEM survey is scheduled to commence in mid-April 2019 with final data and outputs expected to be available mid-2019.

The Stage 1 reverse circulation (RC) drill testing will include first pass testing of AEM targets including the [high priority copper-cobalt Scorpion drill target](#).

Stage 1 Metallurgy

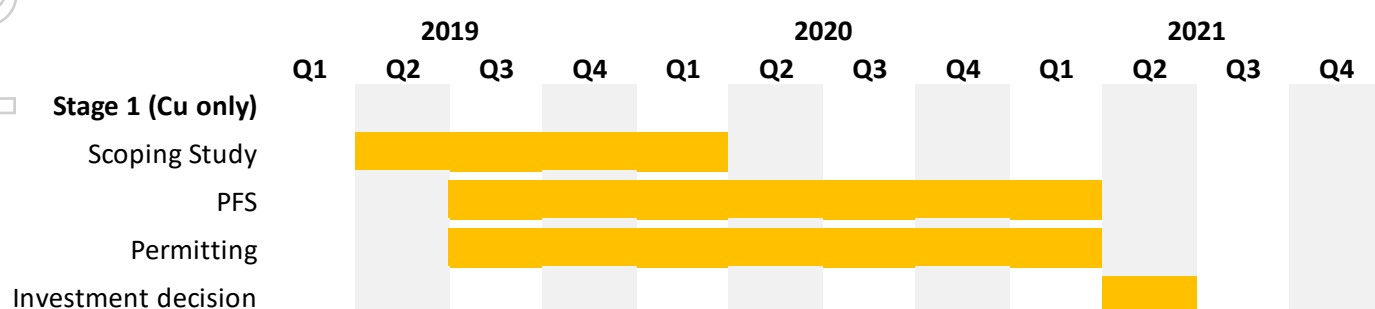
The new scoping study will utilise extensive metallurgical testing of the Mutooroo sulphide mineralisation undertaken between 2007 and 2017, which indicated that high recoveries of copper could be achieved using proven conventional flotation processing methods. Key conclusions of the previous sulphide ore testwork included:

- The coarse-grained quartz gangue can be removed via heavy liquid separation, with minimal loss of sulphides.
- Sulphide ore has comparatively low crushing, work and abrasion indices.
- Good copper recoveries (>95%) reporting to a high grade copper concentrate (>30% copper) were achieved using standard flotation methods.
- Low levels of penalty elements (uranium and arsenic) in the copper concentrate.
- Roasting of the sulphide concentrate and leaching of the calcine returned high recoveries for copper (~95%) and cobalt (~88%).

It is anticipated that additional metallurgical testwork would be required for the scoping study to determine the compatibility of any new sulphide resources with the existing Mutooroo flotation flowsheet. This would be further validated and optimised in the PFS.

The scoping study is aimed for completion in the first quarter of 2020, with the PFS and permitting for the copper only project to be delivered in early 2021 after which a project investment decision can be made (see Table 2).

Table 2 - Mutooroo Stage 1 (copper only) project development timeline



Stage 2 Work Program

Stage 2 of the program would aim to unlock the cobalt potential of the Mutooroo deposit and any new copper-cobalt resources, as well as investigate the viability of transitioning mining of the Mutooroo deposit from an open pit to an underground operation, given the favourable copper and cobalt grades. Both aspects are crucial to determining the longer term sustainability of mining operations at Mutooroo.

Commenting on the commencement of the Mutooroo scoping study, Havilah's CEO, Mr Walter Richards

said: "The planned study will capitalise on the considerable opportunity at Mutooroo that is presented by combining our extensive existing knowledge of the deposit with the exciting potential for new finds in the surrounding Mutooroo Copper-Cobalt District.

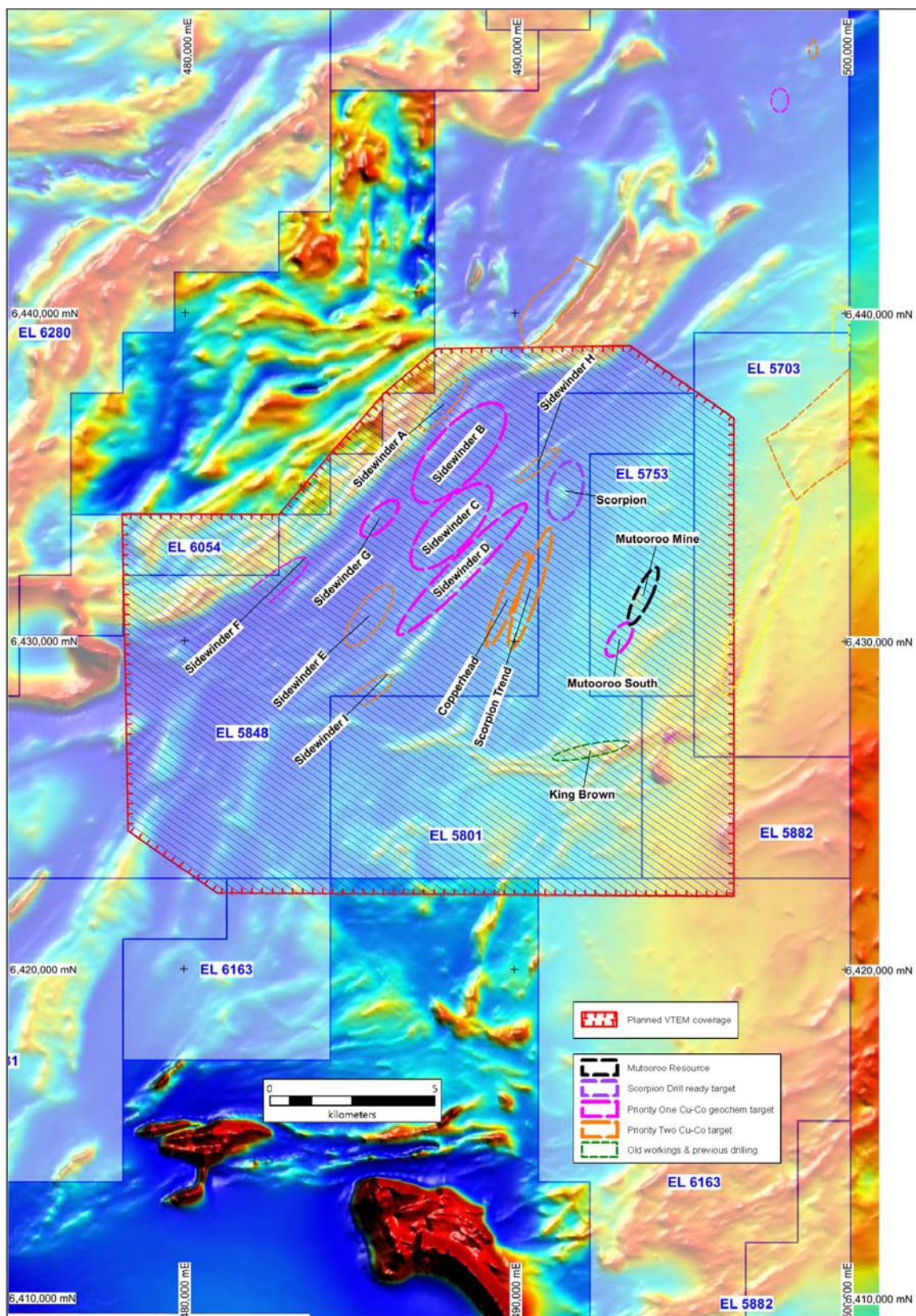
"The staged approach to redefine and develop Mutooroo, initially as a copper only project, allows us to reduce project risk, enhance project economics with a realistic capex target, without eliminating the potential additional value from the recovery of cobalt.

"This approach to the scoping study accords with Havilah's *Copper Strategy - Enhanced by Cobalt*," he said.

For further information visit www.havilah-resources.com.au

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About the Mutooroo Copper-Cobalt-Gold Project

The Mutooroo copper-cobalt-gold project is located 40 minutes' drive west of Broken Hill and 16 km south of the transcontinental railway line. It is a lode-style massive sulphide copper-cobalt-gold deposit that contains a published Measured + Indicated + Inferred JORC Resource of 13.1 million tonnes of 1.5% copper for a total contained 195,000 tonnes of copper, 8,400 tonnes of associated cobalt and 44,600 ounces of gold (refer to **Table 3** resource table below).

Table 3 - 2010 JORC Resource for Mutooroo from ASX announcement 18 October 2010

Classification	Mt	Copper %	Cobalt %	Gold g/t	Copper Kt	Cobalt Kt	Gold Kozs
Measured Oxide	0.60	0.56	0.040	0.08			
Total Oxide	0.60	0.56	0.040	0.08	3.3	0.2	1.5
Measured Sulphide	4.15	1.23	0.140	0.18			
Indicated Sulphide	1.70	1.52	0.140	0.35			
Inferred Sulphide	6.68	1.71	ISD	ISD		(using only MEPL data)	
Total Sulphide	12.53	1.53			191.7	8.2	43.1
Total Mutooroo	13.13				195.0	8.4	44.6

Minor rounding errors may occur. ISD = insufficient assay data, relates to 1960's MEPL core drilling where there has been only limited analysis for copper and gold.

Cautionary Statement

This announcement contains certain statements which may constitute "forward-looking statements". Such statements are only predictions and are subject to inherent risks and uncertainties which could cause actual values, performance or achievements to differ materially from those expressed, implied or projected in any forward looking statements. Investors are cautioned that forward-looking statements are not guarantees of future performance and investors are cautioned not to put undue reliance on forward-looking statements due to the inherent uncertainty therein.

Competent Persons Statement

The information in this announcement that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on data and information compiled by geologist, Dr Chris Giles, a Competent Person who is a member of The Australian Institute of Geoscientists. Dr. Giles is Technical Director of the Company and is employed by the Company on a consulting contract. Dr. Giles has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activities being undertaken to qualify as a Competent Person as defined in the 2012 Edition of 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Dr. Giles consents to the inclusion in the announcement of the matters based on his information in the form and context in which it appears. This information was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported