Mutoooo Copper-Cobalt Deposit Resource Statement

Havilah Resources

Havilah Resources NL *aims to become a significant producer of copper, gold, cobalt and molybdenum from its 100% owned Kalkaroo, Mutooroo and Benagerie projects, which are at advanced feasibility stage. It holds more than 6,500 km^2 of surrounding tenements in the highly mineralized Curnamona Province of South Australia, where it maintains an active drilling program. Deposits of iron ore, tin and hard rock uranium have been drilled, with good exploration upside. Havilah owns strategic interests in uranium explorer, Curnamona Energy (45.4%) and hot rock geothermal explorer, Geothermal Resources (58%.)*

Issued Capital

82 million ordinary shares
2.425 million unlisted options

Contact

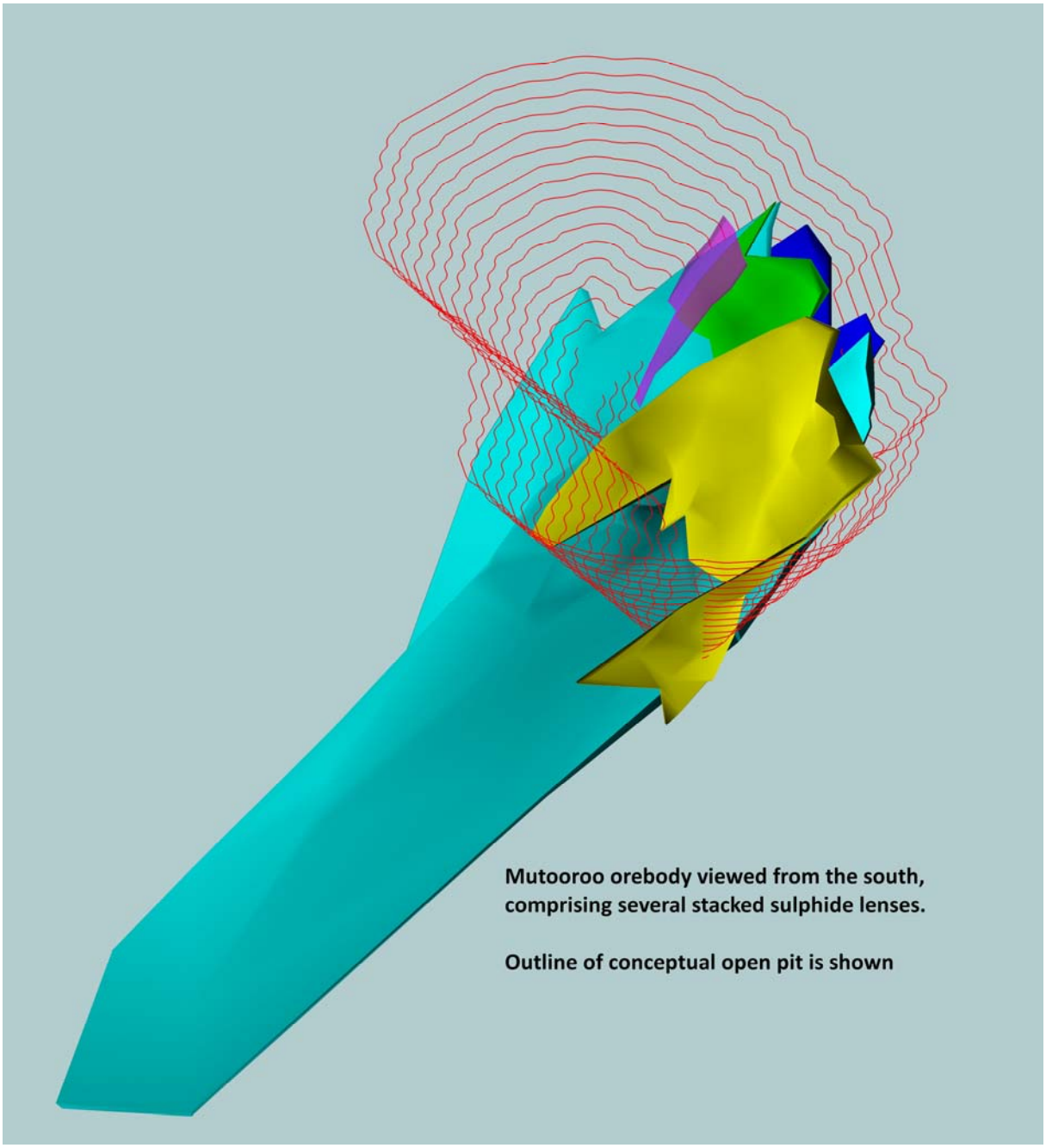
Dr Bob Johnson – Chairman
+ 61 (0)8 83389292

Highlights

- JORC resource of 13.1 million tonnes of 1.48% copper at Mutooroo.
- Translates to a metal inventory of 192,000t copper and a qualified 17,500t cobalt, 92,000 oz gold and 2.5 mt of sulphur.
- High projected local acid demand can potentially consume all roaster acid production, thus favouring roaster treatment of the ore.
- Good exploration upside and favourable logistics.

Primary sulphide ore, Mutooroo

Havilah Resources NL (Havilah – ASX:HAV) advises that as part of ongoing pre feasibility study activities, its geologists have generated a detailed geological model of the Mutooroo deposit as shown in the following picture.



This geological model has formed the basis for an initial JORC compliant resource estimation, completed by a consultant geologist experienced in this field using Vulcan 3D software, resulting **in a combined measured, indicated and inferred resource of 13.1 million tonnes of 1.48% copper** as detailed in the following table.

Mutooroo Resource Estimate – October 2010

Classification	Category	Tonnes	Cu%	Co%	Au_ppm	SG
Measured	Oxide	598,047	0.56	0.04	0.08	2.32
Measured	Sulphide	4,149,088	1.23	0.14	0.18	3.33
Indicated	Sulphide	1,697,475	1.52	0.14	0.35	3.64
Total Meas+Indic	All	6,444,610	1.24	0.13	0.21	3.32
Total Meas+Indic	Sulphide	5,846,563	1.31	0.14	0.23	
Inferred	Sulphide	6,683,349	1.71	ISD	ISD	3.43
Grand Total	All	13,127,959	1.48	ISD	ISD	3.38
Total Sulphide	Sulphide	12,529,912	1.53	ISD	ISD	3.43

1. Minor rounding errors may occur
2. ISD = insufficient assay data, relates to 1960's MEPL core drilling where there has only been sporadic analysis for Co and Au. Examination of available Co and Au assays for this older drilling reveals similar Cu-Co and Cu-Au ratios to the upper measured and indicated resource leading to confidence that similar Co and Au grades occur in the deeper inferred resource which would need to be confirmed by further drilling. MEPL estimated a non-JORC resource of 8.9Mt @1.9% Cu.

The deposit also contains appreciable cobalt, which is not included in the total resource estimate above because limited assays are available for the Inferred Sulphide resource category. However, based on ratios of copper : cobalt in the ore as determined from extensive drilling by Havilah, **a cobalt grade of 0.14%** is suggested, **making Mutooroo one of the highest grade cobalt sulphide deposits in Australia. Apart from the contained 192,000 tonnes of copper and estimated 17,500 tonnes of cobalt, the sulphide ore also has significant gold credits (estimated approximately 92,000 ounces) and sulphur resources (estimated 2.5 million tonnes).**

Mutooroo Metal Inventory – October 2010

			Contained metal			
Classification	**Category**	**Tonnes**	**Cu tonnes**	**Co tonnes**	**Au oz**	**S tonnes**
meas+indic	Sulphide	5,846,563	76,795	8,016	42,829	1,169,313
All	Sulphide	12,529,912	191,707	17,542	92,665	2,505,982
Current price (A$)			8,400/t	38,000/t	1,381/oz	200/t
	supported by JORC resource					
	estimate only					
	estimate assuming sulphide ore contains 20% sulphur					

The above resource estimate relies on results from a total of 250 drillholes, including 206 RC and 44 diamond tailed core holes. The database used for the resource calculation includes a total of more than 7,000 assayed samples and over 650 density measurements from core samples. The resource block model is constrained by a wire framed geological interpretation of the sulphide lodes. The attached table summarises geological parameters relevant to the resource estimate.

The Mutooroo copper-cobalt mineralisation occurs as a series of stacked sulphide rich lodes developed within a 45^0 west dipping shear zone that is largely confined to an amphibolite sill within Broken Hill age high grade metamorphic rocks.
The orebody shows a distinctive vertical zonation caused by weathering and oxidation :

Completely Oxidised (top 25-35 metres) - to an iron oxide-quartz fragment gossan/ironstone with local malachite – atacamite – chrysocolla – cuprite mineralisation.
Transitional (underlying the above) - a variably developed, secondary, supergene pyrite (after pyrrhotite) –chalcocite – covellite - quartz dominant zone.
Primary Sulphide - pyrrhotite dominant – chalcopyrite - pyrite, disseminated and massive sulphide mineralisation. High grade, primary sulphide milled breccia mineralisation is typically composed of pyrrhotite (60%) - quartz fragments (25%) - pyrite (5%) - chalcopyrite (5%) with local fragments of variably altered country rock.

It is important to note that the feasibility study drilling focussed on comprehensively defining only that part of the resource that was considered directly amenable to open pit mining, based on an open pit shell outlined by earlier scoping studies. There is high potential to convert the deeper inferred resources to indicated/measured resources by infill drilling between the existing, widely spaced mineralised 1960's diamond drill intersections. Thusfar only approximately 700 metres of the more than 2000 metres of strike of the mineralised structure has been drilled to resource status.

The completed geological resource block model forms the basis for detailed mine design work currently being conducted by senior mining engineers. The objective is to generate an optimum open pit mine design using current estimates of capital and operating costs in order to develop an economic model for mining the Mutooroo deposit.

Quite extensive metallurgical test work has been completed on the Mutooroo sulphide ore showing that it can produce a high grade copper concentrate by conventional flotation. However, maximum value can be extracted from the ore by roasting it, thereby liberating both copper and cobalt and utilizing the high sulphur content to produce sulphuric acid. The residue remaining is very pure iron ore.

Two potential development options are presently being investigated by Havilah in order to maximize the value of the Mutooroo deposit :

1. Construct a roaster in South Australia and market the acid locally, to take advantage of the high local demand. Havilah's studies indicate that the cost to build a roaster with a throughput of approximately 500,000 tpa is more than A$300m.
2. Ship the sulphide concentrate to an offshore smelter / roaster. Havilah has employed a consultant to investigate this possibility in China over the last few months, with some positive results. This alternative would result in a lower net return to Havilah, but cash-flow could be achieved earlier and the initial capital cost to build a roaster could be avoided altogether.

Dr K R Johnson
CHAIRMAN

This Mineral Resource Statement has been compiled in the accordance with the guidelines defined in the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2004 Edition).

The information in this report has been compiled by Dr Bob Johnson who is a member of the Australasian Institute of Mining and Metallurgy and Dr Chris Giles who is a member of The Australian Institute of Geoscientists. Drs Johnson and Giles are employed by the Company on consulting contracts. They have sufficient experience which is relevant to the style of mineralization and type of deposit under consideration to qualify as Competent Persons as defined in the JORC Code 2004. Drs Johnson and Giles consent to the release of the information compiled in this report in the form and context in which it appears.

Enquiries should be directed to Dr Bob Johnson, Chairman, on (08) 83389292

Assessment and Reporting Criteria

The following table provides a summary of important criteria related to the assessment and reporting of the Mutooroo Copper - Cobalt resource.

Criteria	Status
Sampling Techniques, Assay Data, Drilling Details	
Havilah drillholes used in resource estimation	• A total of 206 RC and 22 DD drillholes totaling approximately 25,588 metres are included. This includes a total of approximately 2,161m of drill core and 23,427m of RC samples. This data was used to define the measured and indicated part of the resource
Non-Havilah drillholes used in resource estimation	• 22 Mines Exploration (MEPL) diamond drillholes completed in the 1960s and totaling approximately 12,000m were used to define the deeper, inferred part of the resource. • There is good general correlation of the geology and assay data between these earlier drillholes and Havilah drillholes although only the higher sulphide intervals were sampled by MEPL and assayed for Cu with only limited Au and Co analyses.
Drilling techniques	• All RC holes were drilled using standard face sampling hammers with bit sizes ranging from 120mm to 136mm. • Diamond core sizes ranged from NQ (50mm) to PQ3 (83mm) for Havilah holes and BQ (36mm) and NQ for MEPL holes. Triple tube methods were used where required to maximize core recoveries. • Havilah drill core was routinely orientated mainly with ACE orientation tools.
Sampling techniques	• RC assay samples averaging 2-3kg were riffle split as 1m intervals. • Half core samples averaging 0.5m were cut using a diamond saw for Havilah holes. • Half core samples averaging 1.5m were mechanically split for MEPL holes.
Drill sample recovery	• Overall RC sample recoveries and diamond drill core recoveries were very good and are considered adequate for interpretation purposes. • Core recovery for Havilah diamond drillholes averaged 98 %. • Core recovery for MEPL holes within mineralisation appears to have been good with losses only documented in mica schist zones.
Logging	• All Havilah RC samples and drillcore was logged by experienced geologists directly into a digital logging system with data uploaded into an Excel spreadsheet database. • All Havilah drillcore and RC chip trays have been photographed. • All Havilah drillcore is stored at Cockburn. • There is some remaining MEPL core stored at the PIRSA core library at Glenside. Hardcopy logs have been coded and entered into the database.
Quality of assay data and laboratory tests	• Havilah samples were assayed by Amdel (2005-2006) and ALS (2007 onwards) using similar methods (multi acid digest with ICP analysis for base metals and fire assay method for gold). Methods used are considered to be appropriate. • Assay data accuracy and precision was continuously checked through submission of field and laboratory standards, blanks and repeats which were inserted at a nominal rate of approximately 1 per 50 drill samples. No data quality issues of significance were identified.

Verification of drilling methods and sampling	• 5 diamond holes in close proximity (4-13m) to RC holes were analysed with comparisons made for the relative intersection widths, hole size, volume differences, metre x %Cu, metre x %Co and metre x ppm Au, RC sample size and quality and any possible contamination issues. It was found that although there were wide variations in total copper metal and gold metal calculations between RC and diamond holes, the overall average RC and drillcore metal calculations produced relatively similar results (within 10% for Cu, 21% for Co and within 13% for gold. There was no significant observed bias between the drill methods and no significant differences in intersection widths. No issues that could significantly affect the resource calculation were identified.
Location of drillholes	• Drillhole collar coordinates (Havilah and MEPL) were surveyed in UTM coordinates using a differential GPS system with an x:y:z accuracy of 20cm:20cm:40cm. • Most Havilah RC holes have been surveyed using digital multi shot survey cameras on 10m downhole intervals. Of 206 holes only 12 shallow holes were unable to be surveyed due to hole collapse. • Havilah diamond holes were surveyed at approximately 30m downhole intervals using a digital multi shot survey camera. • MEPL holes were surveyed using a combination of acid etch and tropari methods. Distance between effective surveys averaged 56m with some surveys excluded due to excessive dip or azimuth variations.
Drillhole spacing and distribution	• Havilah drilling was completed on nominal 50m sections perpendicular to the strike of the mineralised lodes (average 025º grid) targeting the lodes from surface down to 250m below surface. Holes were drilled towards the east at -60º and RC are spaced at 25m along the drill lines with some deeper diamond holes spaced at 50m. • Earlier MEPL holes were also drilled at right angles to the lodes and were generally spaced at 150m intervals targeting mineralisation between 150m and 560m below surface. • The intersection angle of most holes between 70 and 90 degrees depending on hole deviations. • Resource drilling is predominantly concentrated between 493200E and 494100E and between 6430400N and 6432000N.
Estimating and Reporting of Mineral Resources	
Database integrity	Examination of the database has not revealed any issues of concern that could significantly affect the current resource estimation.
Geological interpretation	• The Mutooroo copper-cobalt mineralisation occurs as a series of en echelon, locally structurally remobilised, sulphide rich breccia zones/lodes developed within a locally altered shear/fracture zone largely confined to an amphibolite body. The amphibolite body/sill is flanked by a high grade deformed felsic gneiss and schist package. • The mineralisation trends NNE and dips to the west at approx 45º. • The upper 30-40m is oxidised and consists of iron oxides and quartz fragments with local secondary copper minerals including atacamite, chrysocolla, malachite and cuprite. • A variably developed secondary/supergene sulphide zone occurs below the base of oxidation and extends down along the footwall and hanging contacts of most lodes. Secondary vuggy/powdery pyrite after pyrrhotite occurs along with chalcocite, bornite/covellite and remnant chalcopyrite. Secondary sulphides have been intersected up to 250m below surface with the thicker lodes having a selvedge of secondary sulphides around a core of primary sulphides while thinner lodes are commonly completely replaced by secondary sulphides. • Primary sulphides are dominated by pyrrhotite with lesser pyrite and chalcopyrite. Breccia fragments include quartz and a range of variably altered wall rock fragments. Primary pyrrhotite dominant mineralisation

	has been intersected from 35m vertical depth. • Sulphide lodes have been interpreted generally using a minimum 10% logged sulphide content. Most lode contacts are relatively sharp with generally only minor disseminated sulphides occurring outside the lode margins. • Six lodes with good continuity from section to section were modeled and used in the resource estimation. Other discontinuous or crosscutting sulphide zones have not been included in the resource at this stage.
Estimation and Modeling Techniques	• Polygons and hence triangulations are based on interpretations completed on nominal 50m sections for Mutooroo. • Triangulated interpretations have been generated for the following lithological domains: Min1, Min2, Min3, Min4, Min5, Min6 • Triangulated interpretations were also generated for the base of oxidation and each of the above domains were estimated separately for oxidised and unoxidised material. • The block model was constructed with parent blocks of 10mE by 10mN by 10mRL with sub blocks available to a minimum of 1mE by 2mN by 2mRL. • Inverse distance was used to estimate Cu, Au and Co grades and specific gravity separately for all domains and oxidation states. • The search directions for each estimation was aligned with relevant geological correlation and distances based on drill hole spacing. Unfolding was used during estimation to interpolate grades and specific gravity honouring spatial orebody geometry. • 1m assay composites were used with length weighting used in estimation. • A minimum of 1 and maximum of 5 composites were used per estimate.
Moisture	• Tonnes have been estimated on a dry basis.
Cut-off parameters	• No cut off parameters have been applied as the resource is constrained by geological boundaries of sulphide bearing lodes.
Bulk density	• A total of 653 Havilah core samples were measured for density using the weight in air vs weight in water method. • Results were geocoded to allow for SGs to be calculated for the main rock and mineralisation types which were then applied to all Havilah RC and diamond drill intersections. These calculated SGs were then block modeled and compared to measured SGs with excellent correlation. • All MEPL mineralised intervals were given an SG of 3.45 which was based on the conversion of a “tonnage factor” of 10.5 cu ft/ton, which was used in the 1973 pre JORC resource calculations. No information on background for this “tonnage factor” has been found but is very close to Havilah calculations for fresh sulphide lode material.
Classification	• Mineral resources have been classified on the basis of geological confidence in the continuity of mineralisation and the quality of the data used. As a result the deeper mineralisation outlined by the older MEPL drilling has been categorized as inferred due to the wider drill spacing, downhole survey techniques and incomplete assay data. Only Havilah drill data has been used in the measured and indicated resource envelopes. • In the geologist’s opinion there is an extremely low likelihood that further drilling within the measured and indicated resource envelope would materially alter the current resource estimate.