ASX MEDIA RELEASE

Havilah Resources
A New Mining Force in South Australia

7 March 2018

NEW COBALT RESOURCE AT KALKAROO

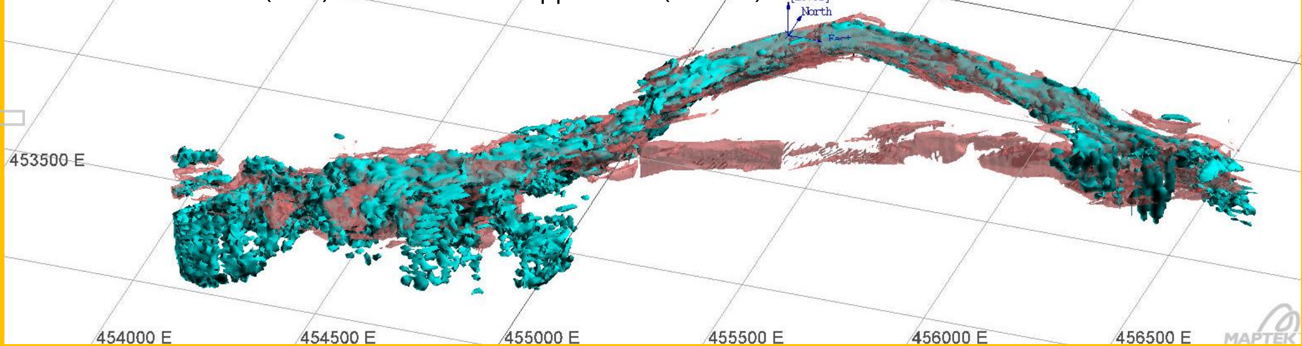
HIGHLIGHTS

- **23,200 tonnes of cobalt metal contained in a newly estimated Inferred Resource of 193.3 million tonnes @ 120 ppm cobalt.**
- **Expands Havilah's total JORC resource cobalt metal inventory to 31,390 tonnes, with appreciable upside potential.**
- **All cobalt is contained in cobaltian pyrite, which will be recovered as a concentrate during the copper flotation process.**
- **Potentially enhances returns for the already attractive Kalkaroo copper-gold project.**

Havilah Resources Limited (**Havilah**) is pleased to report that it has estimated an Inferred Resource for cobalt in its Kalkaroo copper-cobalt-gold deposit, near Broken Hill, of **193.3 million tonnes @ 120 ppm (parts per million) cobalt** containing approximately **23,200 tonnes** of cobalt metal.

This new Inferred Resource for cobalt was estimated by Havilah completely within the recently reported Kalkaroo copper-gold sulphide resource shell, that was independently determined by RPM Global (refer to ASX announcement 30 January 2018)*.

Cobalt resource shell (blue) coincides with copper shell (salmon)



Virtually all of the cobalt within the Kalkaroo resource is contained within the iron sulphide mineral, pyrite. It is planned that the cobaltian pyrite will be recovered as a concentrate during the copper flotation process. Assuming an overall 3% pyrite content in the Kalkaroo deposit, recovery of a high purity cobaltian pyrite concentrate by flotation equates to a maximum 33 times concentration factor for the cobalt. The concentration process therefore increases the cobalt grade to potentially 0.40% in the cobaltian pyrite concentrate from the overall Kalkaroo cobalt content of 120 parts per million. This makes it an attractive grade cobalt feedstock for subsequent processing to recover cobalt, and also significant amounts of associated gold, which is known from previous metallurgical tests.

Establishing the most efficient metallurgical process for recovery of cobalt from cobaltian pyrite is an important focus of Havilah's current metallurgical test work. Accordingly, Havilah's recent cobalt recovery initiative with Cobalt Blue Holdings (ASX:**COB**), (refer to ASX announcement 1 February 2018) involves testing of a sample of Mutooroo massive sulphide ore by COB's innovative proprietary cobalt recovery process. Havilah is also conducting its own leach testing program in parallel, including bacterial methods that have been successfully employed on many other pyrite ores.

Table 1 Kalkaroo Resource Summary Table

	Tonnes Millions	Cobalt Grade ppm	Copper Grade %	Gold Grade g/t	Cobalt Metal Tonnes	Copper Metal Tonnes	Gold Metal oz
Cobalt							
Inferred	**193.3**	**120**			**23,200**		
Copper-Gold							
Measured	85.6		0.57	0.42		487,900	1,160,000
Indicated	27.9		0.49	0.36		136,700	324,000
Inferred	110.3		0.43	0.32		474,300	1,139,000
Total Copper-Gold	**223.8**		**0.49**	**0.36**		**1,098,900**	**2,623,000**

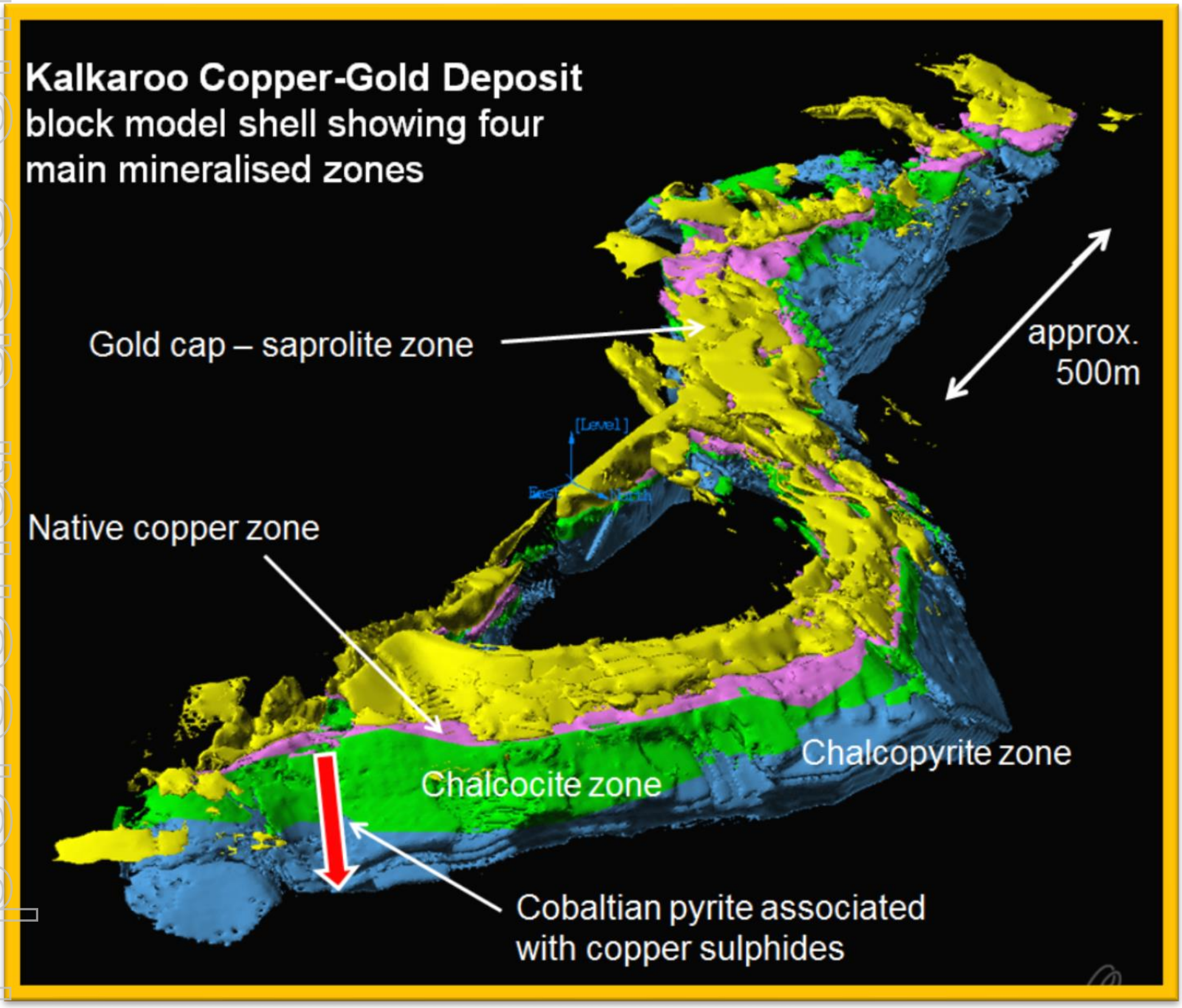
1. Minor differences may be included due to rounding of quantities.
2. The cobalt resource is reported with a 20 ppm cobalt lower cut-off grade (see explanation below).
3. The Inferred Resource category is adopted due to the cobalt recovery process not yet being defined.
4. For further detail of the Resource Estimate refer to the accompanying table.
5. The copper and gold resources for Kalkaroo are included for completeness and are sourced from the ASX announcement on 30 January 2018*.

Havilah's total cobalt JORC resource expands to 31,390 tonnes of cobalt metal when this resource is added to the 8,190 tonne Measured and Indicated cobalt resource at the Mutooroo copper-cobalt deposit (refer to ASX announcement 18 October 2010)*, as summarised in the following table.

Table 2 Havilah Total Cobalt JORC Resources Summary

	Tonnes Million	Cobalt Grade - ppm	Cobalt Metal Tonnes
Kalkaroo Cobalt			
Inferred	193.3	120	23,200
Mutooroo Cobalt			
Measured sulphide	4,149	1,400	5,810
Indicated sulphide	1,697	1,400	2,380
Total Cobalt			**31,390**

Commenting on the new cobalt resource estimate for the Kalkaroo project, CEO, Mr Walter Richards said: "There is great potential for cobalt-derived revenue to substantially increase the return from the Kalkaroo project. Kalkaroo is already an attractive advanced stage open pit copper-gold project and the value is further enhanced by this additional cobalt resource. As this cobalt is all contained in cobaltian pyrite, which is a by-product of the copper flotation process, we believe it will be possible to recover the cobalt along with the associated gold in the pyrite. This highlights the importance of the metallurgical test work we are currently pursuing, including with Cobalt Blue Holdings, which is designed to establish the most economically efficient method for recovery of the cobalt."



**Note that the Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant announcement and, in the case of the mineral resources that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.*

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

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Required information under Listing Rule 5.8.1

Kalkaroo is a stratabound copper-gold deposit that occurs in the Mesoproterozoic Curnamona Craton of northeastern South Australia. Mineralising processes introduced copper, gold and lesser cobalt and molybdenum which precipitated as various sulphide minerals in quartz-carbonate veins and bedding parallel replacements.

Both diamond drilling and reverse circulation percussion drilling techniques were used in the delineation of the deposit. For RC drillholes 3 kg samples were taken every metre for assay while half diamond drill core was sampled nominally every metre for the diamond drillhole assaying. Cobalt assaying followed a standard commercial laboratory methodology of grinding, acid digestion and ICP-MS analysis finish.

While the drilling density and continuity of mineralisation between drillholes supports Measured, Indicated and Inferred resource categories as estimated for the Kalkaroo copper and gold mineralisation (refer Table 1 above), the present cobalt resource is assigned an Inferred Resource status on the basis that the cobalt recovery process is not yet defined. A 20 ppm cobalt lower cut-off grade was applied on the basis that the cobalt resource estimation was confined to blocks already defined on a 0.4% Cu equivalent cut-off grade. Thus, no cobalt resource estimation was undertaken outside of the existing Kalkaroo copper-gold resource. This is a conservative approach considering that the cobalt metal would be additive in value to the copper and gold in the mining blocks and may ultimately expand the mineable ore. No upper cut-off was applied because there are very few outlier high cobalt values and applying such an upper cut-off has negligible effect on the result.

Estimation methodology exactly followed that for the Kalkaroo copper-gold sulphide resource. The block model was constructed in Vulcan 10.0 software with parent blocks of 10mE by 10mN by 10mRL. Estimation was performed using ordinary kriging and inverse distance techniques. It is important to note that the cobalt resource estimate is confined to the unoxidised Kalkaroo sulphide mineralisation and specifically excludes the oxidized saprolite ore types, namely the native copper and gold cap zones that contain no pyrite. This explains in part why the cobalt resource tonnage (193.3 million tonnes) is 14% lower than the total copper-gold resource.

All of the cobalt occurs in cobaltian pyrite which is intimately associated with the two copper sulphide minerals, namely chalcopyrite and chalcocite, which will be mined as one. It is anticipated that a clean cobaltian pyrite concentrate will be produced by flotation of the tail after recovery of the copper sulphides. Commercial methods for recovery of cobalt from pyrite, other than by comparatively expensive fluidised bed roasting, are being actively investigated and tested.

Competent Persons Statement

The estimates of Mineral Resources presented in this Report have been carried out in accordance with the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" (The JORC Code – 2012 Edition). The information in this report that relates to Mineral Resources is based on information compiled by Dr Chris Giles who is a Member of the Australasian Institute of Geoscientists. Dr Giles is a full time employee of Havilah. Dr Giles is the Competent Person for this Mineral Resource estimate and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves'.

The table below is a description of the assessment and reporting criteria for the Kalkaroo cobalt resource, in accordance with Table 1 of The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves.

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• All RC holes were drilled using standard face-sampling bits, with bit sizes ranging from 120mm to 136mm. All samples were collected via riffle splitting directly from the cyclone. • All AC holes used a 121mm blade bit • Diamond core sizes ranged from NQ (50mm) to PQ3 (83mm). Triple tube methods were used where required to maximize core recoveries. • Drill core was routinely orientated where ground conditions allowed, mainly using the spear technique.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Overall, RC sample recoveries and diamond drill core recoveries were considered to be quite acceptable for interpretation and modelling purposes. • Core recovery for Havilah diamond drillholes was measured directly and averaged 93 %. • The sample yield and wetness of the RC and AC samples was routinely recorded in drill logs. Very few samples were too wet to split. No evidence of RC sample bias due to preferential concentration of fine or coarse material was observed. • Sample recoveries were continuously monitored by the geologist on site and adjustments to drilling methodology were made to optimize sample recovery and quality where necessary.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• All RC and AC samples and drillcore was logged by experienced geologists directly into a digital logging system with data uploaded directly into an XL spreadsheet and transferred to a laptop computer. • All drillcore and RC chip trays have been photographed. • All drillcore and RC chip sample trays and some back-up samples are stored

Criteria	JORC Code explanation	Commentary
		on site at Kalkaroo. All RC and AC samples were logged in detail by experienced geologists directly into a digital logging system with data uploaded. • Logging is semi-quantitative and 100% of reported intersections have been logged. • Logging is of a sufficiently high standard to support any subsequent interpretations, resource estimations and mining and metallurgical studies.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• RC or AC drill chips were received directly from the drilling rig via a cyclone and were riffle split as 1-2m intervals to obtain 2-3kg samples. • Half core samples were collected at 1m intervals, unless otherwise dictated by the geology. • Sampling size is considered to be appropriate for the style of mineralisation observed. Assay repeatability for gold and other metals has not proven to be an issue. • All Havilah samples were collected in numbered calico bags that were sent to ALS assay lab in Adelaide. • At ALS assay lab the samples are crushed in a jaw crusher to a nominal 6mm (method CRU-21) from which a 3 kg split is obtained using a riffle splitter. The split is pulverized in an LM5 to 85% passing 75 microns (method PUL-23). A ~200g split is taken for routine Au & base metal analyses and is stored in paper bags. The remainder of the pulp is retained in calico bags for any further analyses required (eg screen Cu & Au analyses). • All samples are then analysed for a 33 element package using ALS's ME-ICP61 suite, whereby samples undergo a 4 acid digest and analysis by ICP-atomic emission spectrometry and ICP mass spectrometry. Over limit Cu, Pb and Zn are re-assayed using ME-OG62. • Gold is analysed by 50g fire assay, with AAS finish using ALS method Au-AA26.

Criteria	JORC Code explanation	Commentary
		• The total assay methods are standard ALS procedure and are considered appropriate for the main economic elements sought (i.e. Cu,Au &Co).
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• A range of elements were analysed by a range of slightly different techniques by the four companies, all of which are considered acceptable. • Havilah samples were also subjected to the following additional check assaying to provide more reliable results where coarser grained native copper and to a lesser extent, gold, was present. • Screen copper analyses were routinely carried out for samples where native copper had been identified during geological logging. • Screen fire gold analyses were routinely carried out where the initial gold assays were in excess of 0.5ppm. • 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 20 drill samples. • Assay data for laboratory standards and repeats were statistically analysed and any samples that lay outside of a two standard deviation benchmark were re-assayed.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* *The use of twinned holes.* *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Ten pairs of twinned RC/DD holes were analysed with comparisons made for the relative intersection widths, hole size, volume differences, metre x %Cu and metre x gm 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 twinned holes, the overall average RC and drillcore metal calculations produced similar results (within 8% for copper and within 6% for gold). There was no observed bias between the drill methods and no significant differences in intersection

Criteria	JORC Code explanation	Commentary
		widths. • Rigorous internal QC procedures are followed to check all assay results (see section 3) • All data entry is under control of the responsible geologist, who is responsible for data management, storage and security. • RPM completed independent re-assay of field duplicates, specific native copper samples and pulp duplicates. The analysis demonstrated acceptable results but with greater variability for the coarse native copper and gold in the smaller pulp sample repeats.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Diamond drillholes were surveyed at approximately 30m downhole intervals using an Eastman single or multi-shot down-hole camera or a digital camera. • Earlier Havilah RC holes were not surveyed and were assumed not to have deviated significantly from their collar azimuth and inclination. Later RC holes were surveyed in the rods with only dip measurements recorded. The last RC program used non-magnetic drill rods to allow dip and azimuth readings to be collected with only minor (±1°) deviations noted. • Drillhole collar coordinates are surveyed in UTM coordinates using a differential GPS system with an x:y:z accuracy of 20cm:20cm:40cm and are quoted in ADG 66 datum.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• Havilah drilling was completed on nominal 25m sections perpendicular to the strike of the primary copper-gold mineralisation at Kalkaroo West and on nominal 100m sections perpendicular to the strike of the Kalkaroo Main Dome mineralisation. Holes were drilled towards the south at -60 to -75°. • Earlier non-Havilah holes were drilled at various oblique angles and directions including to the north. • The intersection angle is between 60 and

Criteria	JORC Code explanation	Commentary
		90 degrees through the Kalkaroo Main Dome style mineralisation and between 20 and 45 degrees through the more steeply dipping Kalkaroo West vein style mineralisation. The deposit is largely untested deeper than 250m below surface. • Sample compositing was not used.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• The drillhole azimuth and dip was chosen to intersect the mineralized zones as nearly as possible to right angles and at the desired positions to maximize the value of the drilling data. • At this stage, no material sampling bias is known to have been introduced by the drilling direction.
Sample security	• *The measures taken to ensure sample security.*	• RC and AC chip samples are directly collected from the riffle splitter in numbered calico bags. • Several calico bags are placed in each polyweave bag which are then sealed with cable ties. The samples are transported to the assay lab by Havilah personnel at the end of each field stint. • There is minimal opportunity for systematic tampering with the samples as they are not out of the control of Havilah until they are delivered to the assay lab. • This is considered to be a secure and reasonable procedure and no known instances of tampering with samples occurred during the drilling programs.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• Ongoing internal auditing of sampling techniques and assay data has not revealed any material issues. • Robert Dennis of independent mining consultants, RPM, visited the site in November 2016 and found field procedures to be adequate. • RPM completed independent re-sampling and assaying and found results to be adequate.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.*	• Security of tenure is via current mining lease applications and an underlying exploration licence (EL5800) owned 100% by Havilah.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Kalkaroo was explored by a number of major mining groups in the past including Placer, Newcrest Mining and MIM Exploration, who completed more than 45,000 metres of drilling in the region. • All previous exploration data has been integrated into Havilah's databases.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Kalkaroo consists of stratabound replacement and vein style copper-gold mineralisation within Willyama Supergroup rocks of the Curnamona Craton. • The stratabound mineralization is uniformly distributed along more than 3 km of strike that follows an arc around the 35 degree dipping northern nose of the Kalkaroo south dome. It is hosted by an 80m -120m thick mineralised horizon that is sandwiched between psammitic footwall rocks and a thick pelitic hangingwall sequence. • In part, the mineralization is associated with near-vertical, mineralised quartz vein breccia fracture/fault fillings, which probably formed channel ways for the mineralising fluids. Interference folding resulted in dome structures which probably acted as structural traps for the rising mineralising fluids carried by these vertical structures. • The mineralising events were associated with iron-rich and sodium-

Criteria	JORC Code explanation	Commentary
		rich alteration fronts, which are manifest as widespread fine-grained magnetite in the lower sandy formations and as pervasive albite alteration. • Erosion in the Mesozoic and Tertiary period exposed the Kalkaroo deposit to prolonged and deep weathering. Consequently, the deposit shows typical supergene enrichment features in its upper part, caused by oxidation of the primary sulphides in the weathering zone, forming a soft clay rich rock called saprolite. This is manifest in a sub-horizontal stratification of the ore minerals from top to bottom; 1. Supergene free gold in saprolite, with generally minor copper, recoverable by gravity and cyanide leaching methods. 2. Native copper and gold in saprolite, largely recoverable by gravity methods. 3. Chalcocite dominant with gold, recoverable by conventional flotation. 4. Chalcopyrite dominant with gold and locally rich molybdenum, recoverable by conventional flotation. 5. Cobaltian pyrite is associated with chalcocite and chalcopyrite mineralisation and formed during the same mineralisation process.
Drill hole information	• *A summary of all information material to the under-standing of the exploration results including a tabulation of the following information for all Material drill holes:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length*	• A total of 493 Havilah drillholes totalling approximately 82,434 metres were used in the resource estimation of which there are 25,209 metres of drill core and 57,225 metres of reverse circulation (RC) and aircore (AC). • 65 earlier non-Havilah drillholes totalling approximately 15,047 metres were also used in the resource estimation where they contained cobalt assays. • This includes three generations of pre-Havilah drillholes, completed by major mining companies, namely Placer Dome, Newcrest and MIM.

Criteria	JORC Code explanation	Commentary
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• There is good correlation of the geology and assay data between these earlier drillholes and Havilah drillholes.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Exploration drilling results are not being reported for the Mineral Resource area.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	• Down-hole lengths are reported. Drillholes are always oriented with the objective of intersecting mineralisation as near as possible to right angles, and hence down-hole intersections in general are as near as possible to true width. • For the purposes of the geological interpretations and resource calculations the true widths are always used.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Exploration drilling results are not being reported for the Mineral Resource area.
Balanced Reporting	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Where comprehensive reporting of all*	• Exploration drilling results are not being reported for the Mineral Resource area.

Criteria	JORC Code explanation	Commentary
	Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples - size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Exploration drilling results are not being reported for the Mineral Resource area.
Further work	• *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large- scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Additional infill drilling may be carried out in the future to upgrade Inferred and Indicated Resources to Measured Resources and also to explore strike and depth extensions outside of the current resource envelope.

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• All drill data is directly logged into a field based digital logging system and then uploaded to an Access database by the responsible geologist, who also carries out verification and data checking at the time. • Laboratory assay data is received digitally and uploaded to the database electronically with relevant QC checks. • All data in the database is validated for consistency and accuracy. Various powerful QC checks for overlapping data, missing assays and other errors are performed at the time the data is transferred into the Vulcan 3D database for the resource modelling work. Errors identified are immediately fixed and cross-checked to ensure there are no systemic errors. • All original assay data sheets, logging files, drill chips and half or quarter core are retained for validation purposes. • Standard deviation plots of all data (e.g. assays, densities, recoveries, sample quality) were used to identify outliers for subsequent investigation for errors. • Drillhole collar locations were checked for consistency on cross sections. • Drillhole plots were examined to ensure consistency of surveys. • Examination of the database has not revealed any systemic issues of concern that could significantly affect the current resource estimation.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• A site visit was conducted by Robert Dennis of independent mining consultants, RPM, during November 2016. Robert inspected the deposit area, drill core, the core logging and sampling facility. During this time, notes and photos were taken. Discussions were held with site personnel regarding drilling and sampling procedures. No major issues were encountered.
Geological	• *Confidence in (or conversely, the*	• There is a high level of confidence in

Criteria	JORC Code explanation	Commentary
interpretation	*uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	the geological interpretation of the Kalkaroo deposit, in large part because of the detailed logging undertaken and the experience of the geologists involved. This has allowed a consistent picture of the stratigraphic and structural controls on alteration and mineralisation to be developed for the entire deposit that accords with a comprehensive regional geological understanding, as described in Section 2. • It is important to note that the Kalkaroo mineralisation does not outcrop, so virtually all geological information about the deposit is either gained from drilling data or geophysics. • The main component of the copper-gold mineralisation is replacement style hosted in a favourable stratigraphic horizon which has been displaced and enriched in places with later faulting and vein emplacement. • Superimposed on the primary chalcopyrite copper mineralisation is deep weathering that has produced a vertical zonation in the mineralogy, from gold only in a secondary weathering cap, through native copper and chalcocite • The Dome is transected by a major E-W trending, sub-vertical, quartz-carbonate vein breccia system. A later shear offsets the mineralisation and vein/breccia system by 200m to the north along the western limb of the Dome. • In general the stratigraphy and mineralisation of the Kalkaroo deposit is remarkably uniform over the entire strike length of the Main Dome. • Greater complexity occurs at the western (Kalkaroo West) and eastern ends of the deposit, where considerable disruption occurs due to faulting, and this has required

Criteria	JORC Code explanation	Commentary
		adjustments to the search ellipsoid orientations to avoid biasing errors. • The geology is a major control in guiding the resource estimation. Firstly, in guiding the search ellipsoid orientations and secondly, in outlining different ore types and domains within the overall deposit. • Mineralised envelopes for copper mineralisation were interpreted on drill section using geological logs, copper grades ≥0.2% copper. • Mineralised envelopes for gold mineralisation were interpreted on drill section using geological logs, gold grades ≥0.2ppm. • Mineralisation envelopes for cobalt mineralisation were not generated, but the block model for cobalt was confined to within the mineralisation envelopes defined for the copper and gold mineralisation. • Along strike mineralisation outlines were generally terminated at half the drill hole spacing beyond the last known section of mineralisation. • Down dip mineralisation extrapolation is generally less than 100m below the deepest sectional intercepts, unless strike geological continuity is being interpreted across undrilled sections from one deeply drilled section to another. • The interpreted geological domains are used to control the resource estimation process. • Alternative interpretations will likely result in similar tonnage and grades for the Kalkaroo deposit due to the significant width and strike extent of the deposit.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	• The Kalkaroo mineralisation exists around an arcuate domal structure which has been drilled more than 3km along strike. Copper-gold mineralisation is continuous throughout this strike length and is

Criteria	JORC Code explanation	Commentary
		open at depth along its entire length and is open at both ends. • The true width of mineralisation ranges from 40-80 metres thick, while the plan width of mineralisation above cutoff varies from 50 to 200 metres. • Mineralisation generally has an upper bound 50 metres below the topography and at its deepest has been intersected in a single drillhole 500 metres below the topographic surface.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking*	• Polygons and hence triangulations are based on interpretations completed on nominal 25m sections for Kalkaroo West and nominal 50-100m sections for Kalkaroo Main Dome. Sectional interpretations are made perpendicular to the strike. • Triangulated interpretations have been generated for the following lithological domains: a. Namba b. Saprolite (sap) c. Kalkaroo Main Dome (k), subdivided into k2.2, k2.5, k2.8, k3.2 and k3.5 d. Kalkaroo West (kw), subdivided into kw2.2, kw2.5, kw2.8 and kw3.5 e. Kalkaroo West Vein (kwest_vn) f. Kalkaroo Central Vein (cent_vn) • Lithological logging of drill cuttings and core defined different oxidation levels with increasing depth. • These observations have been used to divide mineralisation into discrete oxidation domains. From top down these are: saprolite, native copper, chalcocite and chalcopyrite. • Statistical analysis was completed for each domain to ascertain the distribution of grades and examine whether any extreme values/outliers existed. Extreme values were investigated and were found to be minimal in number and not deemed to

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	process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	have a material impact on estimated grades. Variogram modelling was completed for each element in each domain. • The block model was constructed in Vulcan 10.0 software with parent blocks of 10mE by 10mN by 10mRL. • Compositing used 1m downhole sample lengths with length weighted assay composites used during estimation to account for small composite intervals at domain boundaries. • Estimation was performed using ordinary kriging and inverse distance techniques. • Estimation passes for the Kalkaroo deposit were generally as follows: First pass search was 50 metres. If interpolation did not fill all blocks on the first pass, then the search ellipsoid was increased to 100m. If interpolation did not fill all blocks on the second pass, then the search ellipsoid was increased to 200m. Domains estimated using unfolding had a search perpendicular to dip and strike of mineralisation set to a ratio of 0.2 of the domain width. • Cu, Au, Co and specific gravity were estimated separately for each combination of lithology and oxidation domains. Estimation domain boundaries relate to mineralised boundaries and were used as hard estimation boundaries. • Up to three estimation passes with increasing search neighbourhood size was used. • Search ellipsoid orientation was controlled using stratigraphic surfaces during estimation with unfolding methods. • An octant based search was used for sample selection during grade estimation. • A minimum of 4 and maximum of 32

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		composites were used per block estimate. • Estimates and calculations were validated visually in Vulcan software to ensure blocks contained all required variables, default codes were correctly applied to blocks and that all domain and oxidation codes were represented. The domain variables were correctly assigned according to priority order within defined triangulations, examination of code allocation within overlapping areas to ensure proper priority order application, inspection for evidence of blocks leaking from a domain due to triangulation errors such as openings, crossing or inconsistency and comparison of domain wireframe volumes to block model domain volumes to ensure block parent and sub-block size is appropriate. • Statistical comparisons of raw sample data versus de-clustered data versus block model data were completed. Drift plots were generated on 200 metre section spacing to check block estimation versus original drill sample grade. • The Kalkaroo resource estimate as at March 2017 was compared to the previous resource estimate from March 2012. Variances identified were primarily due to additional infill drilling providing clarification of previous measured and indicated resources and down dip drilling which allowed reporting of inferred resource classification.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnes have been estimated on a dry basis through the determination of dry specific gravity using the Archimedes principle.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• Gold Cap resource has been calculated using a 0.2g/t gold lower cut-off grade. • For the Kalkaroo main copper-gold resource a 0.4% copper equivalent

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		lower cut-off grade was applied. Mineral resources have been reported using a copper equivalent grade calculated using a six month average World Bank copper and gold price from 1st July 2016 to 31st December 2016 with gold set at US$1,287/oz (A$1727/oz at AUD = 0.74USD) and a copper price of US$5,030/tonne (A$ 6,797 / tonne at AUD = 0.74 USD) and assuming comparable recoveries for both metals. On this basis, 1 ppm Au = 8169 ppm Cu using a conversion factor of 32151 troy ounces per metric tonne. • For the cobalt mineralisation a 20 ppm lower cutoff was used and no upper cut-off. • Cut-off factors include considerations developed in the PFS study.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• The Kalkaroo resources are expected to be mined as a conventional open pit mining operation using excavators and large trucks. • The broad nature of the mineralisation lends itself to an open pit mining operation, initially as a free dig operation due to soft and weathered nature of the host material, as evidenced in the neighbouring Portia gold mine. • No assumptions have been made about mining selectivity for specific material types or quality. • No external mining dilution or other factors have been applied to the resource estimate. • Previously reported prefeasibility studies indicate that there is a sound basis for determining reasonable prospects for eventual economic extraction of the Kalkaroo copper-gold mineralisation and cobaltian pyrite as a by-product
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of*	• No metallurgical assumptions have been applied to the resource model. • Metallurgical test work to date indicates

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	determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	that gold and copper can be recovered satisfactorily from the four main ore types. Acceptable sulphide concentrate grades can be achieved, without any penalty element issues. • Metallurgical test work shows that cobalt is contained within the pyrite mineral lattice and is thus intimately associated with pyrite. It follows that recovering pyrite will recover the cobalt.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• A comprehensive (1400 page) mining lease proposal document, which addresses a range of environmental issues connected with the proposed Kalkaroo mining operation in some detail has been approved by DSD following public comment. • Mining development is subject to the approval of a Program for Environmental Protection and Rehabilitation (PEPR) by the Department for State Development. • This study will comprehensively address all environmental and social impacts and the risk mitigation methodologies to be employed.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• A total of 11,774 core samples were measured for density. • Most SG calculations were made using the weight in air vs weight in water method. • Density of the ore material generally decreases with increasing weathering and this has been taken into account when estimating tonnages for the various ore types. • It is assumed that the bulk density will have little variation within the separate material types across the breadth of the project area. Therefore a single value applied to each material type is considered acceptable.
Classification	• *The basis for the classification of the Mineral Resources into varying*	• The estimates have been classified into Measured, Indicated and Inferred

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	confidence categories. • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	Mineral Resources according to the JORC 2012 code, taking into account drilling density, geological confidence, estimation pass and confidence and continuity of the mineralisation around the likely economic cut-off grades. Classification of mineralisation with the Kalkaroo project was based on confidence of geological interpretation driven by drill density: a. Measured Mineral Resources are restricted to where drill spacing is less than 50 metres. b. Indicated Mineral Resources are defined where drill spacing is between 50 and 100 metres. c. Inferred Mineral Resources are defined where drill spacing is between 100 and 200 metres, or in the case of cobalt because the metallurgical recovery process is not yet defined. • The Mineral Resource estimate appropriately reflects the view of the Competent Person.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• The resource estimation work for copper and gold was undertaken by independent resource geologist, Mr Steve Sullivan who has had more than 30 years' experience in the mining industry, the majority of which has been spent in resource estimation. • All drilling data and relevant interpretations were supplied to Maptek by Havilah and there were extensive technical discussions during the estimation process between Havilah geologists and Maptek to ensure that all of Havilah's geological knowledge and interpretations were taken into account in generating the block model. • Havilah conducted internal peer review of the resource processes and reporting outcomes numerous times throughout the resource estimation work. Several external parties have

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		reviewed prior work at Kalkaroo and provided feedback which was incorporated into the current resource report. • RPM audited the original copper-gold Resource estimate inclusive of independent swath plot review, classification checks and re-reporting of the estimate and verified the estimate. • Havilah have re-run the resource model for cobalt using the original modelling parameters as described above.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The relative accuracy of the Mineral Resource is reflected in the reporting of the Mineral Resource as per the guidelines of the 2012 JORC Code. • Geological and block models have been validated visually against drilling and statistically against input data sets on a domain and swath basis. • The Mineral Resource estimate is based on the assumption that open cut mining methods will be applied and that grade control sampling will be available for selective material delineation. As such the resource estimate should be considered to represent a global resource estimate. • No production data is available to reconcile results.