



12 May 2020

# WEST KALKAROO GOLD DRILLING RESULTS

# HIGHLIGHTS

- —Ongoing West Kalkaroo drilling continues to intersect economic gold intervals, with all reported drillholes stopping at bit refusal in gold mineralisation.
- Horizontal clay-hosted base of Tertiary gold mineralisation confirmed in several aircore drillholes, including 5 metres of 4.56 g/t gold.
- Saprolite gold mineralisation continues to exceed the resource grade, with a best intersection of 25 metres of 2.04 g/t gold. Two drillholes extended gold mineralisation southwards beyond the current resource boundary in a formerly under-explored area, but with good exploration potential.

Havilah Resources Limited (Havilah or Company) is pleased to report gold assay results received for its ongoing shallow gold resource drilling at West Kalkaroo. This drilling is being carried out by Havilah's drilling crew using the aircore (AC) drilling method, which is suited to clayey material and soft decomposed rock. The specific objectives are to define a gold resource in Tertiary age Namba Formation clays and to better define the underlying saprolite gold mineralisation within the confines of a conceptual starter open pit (Figure 1).

Significant new horizontal clay-hosted, base of Tertiary assay results include:

KKAC0515: 5 metres of 4.56 g/t gold from 50-55 metres.

**KKAC0516**: 3 metres of 5.51 g/t gold from 56-59 metres.

KKAC0517: 4 metres of 1.20 g/t gold from 56-60 metres.

**KKAC0518**: 4 metres of 3.33 g/t gold from 56-60 metres.

**KKAC0519**: 1 metre of 1.70 g/t gold from 57-58 metres.

This mineralisation occurs in a near horizontal layer in Namba Formation clays, near the base of the Tertiary age sediments. These flat-lying sediments lie unconformably on the ancient (ca 1600 Ma) metamorphosed bedrock that is the primary source of the gold (Figures 2 and 3). At this location, at the eastern end of the conceptual starter open pit, the base of Tertiary gold-mineralised layer is more than 20 metres deeper than in the west and appears to be following the deepening bedrock surface (refer to ASX announcement of 16 April  $\frac{2020}{1}$ ). This gold mineralisation is not included in any resource at this stage, but is likely to be of economic importance because it occurs in what would normally be considered as waste overburden material that must be removed to access the underlying copper-gold orebody.

As is normal Havilah practice, the aircore drillholes were continued into the underlying saprolite gold and native copper zones until the rock became too hard for the aircore blade bit to penetrate further (Figures 2 and 3). Significant gold intercepts in the saprolite gold and native copper zones include:

**KKAC0514**: 4 metres of 0.90 g/t gold from 87-91 metres (outside of current resource).

KKAC0515: 17.5 metres of 0.71 g/t gold from 76-93.5 metres (in saprolite gold zone).

KKAC0516: 11 metres of 2.22 g/t gold from 81-92 metres (outside of current resource).

**KKAC0517:** 22 metres of 1.0 g/t gold from 86-108 metres (in saprolite gold and native copper zones).

KKAC0518: 25 metres of 2.04 g/t gold from 80-105 metres (in saprolite gold zone).

KKAC0519: 14 metres of 1.0 g/t gold from 87-101 metres (in saprolite gold zone).

**KKAC0520:** 4 metres of 3.77 g/t gold from 97-101 metres (in saprolite gold zone).

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In every case the drillholes ended in gold mineralisation, suggesting that it may continue at depth. All intersections were above the 0.74 g/t average resource grade of the saprolite gold (Oxide Gold Cap) zone (refer to Kalkaroo Oxide Gold Cap JORC Mineral Resource Table on page 10, Havilah 2019 Annual Report) with the exception of KKAC0515.

Of particular note are the gold intersections in KKAC0514 and KKAC0516, which are outside of the current resource envelope. There are very few earlier Havilah drillholes this far south, and conceptually there is the possibility of significant new mineralisation here coincident with brittle fracturing in an anticlinal fold structure (refer to ASX announcement of 23 October 2013).

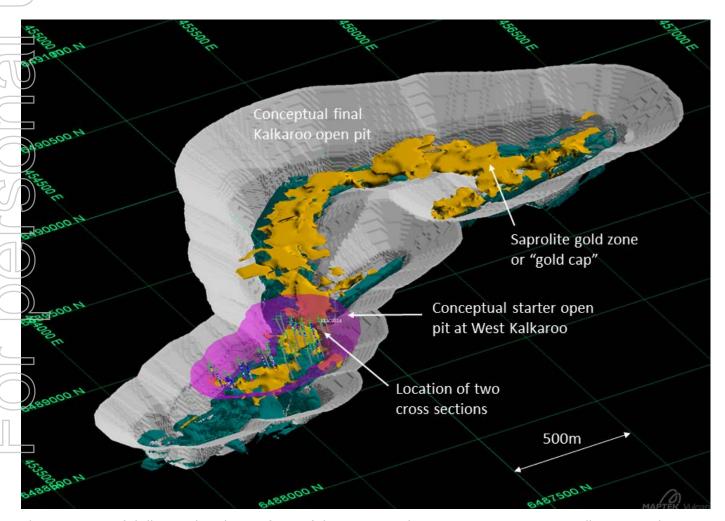
## Commenting on these new gold assay results Havilah's Technical Director, Dr Chris Giles, said:

"Once again the West Kalkaroo gold drilling results continue to be consistently positive.

"Good gold grades have been returned in the base of Tertiary clays, which has confirmed the eastern extensions of this persistently gold mineralised, shallow clay layer.

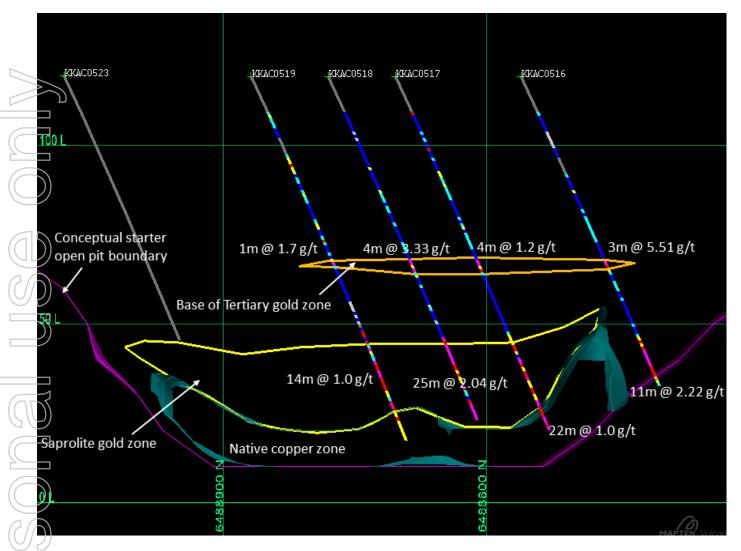
"A further repeat of better than published resource grades for the saprolite gold ore is also positive for the conceptual starter open pit economics.

"Once results are finalised for this round of drilling Havilah's mining engineers will be able to confirm the expected viability of a gold-only starter open pit." he said.



**Figure 1** Area of drilling within the confines of the conceptual starter open pit at West Kalkaroo in relation to the greater Kalkaroo copper-gold deposit.





**Figure 2** Cross-section through recent West Kalkaroo aircore drillholes KKAC0516-KKAC0519, showing gold mineralised intervals in the base of Tertiary, saprolite gold zone and native copper zone in the drillholes. Assay results have not yet been received for drillhole KKAC0523.

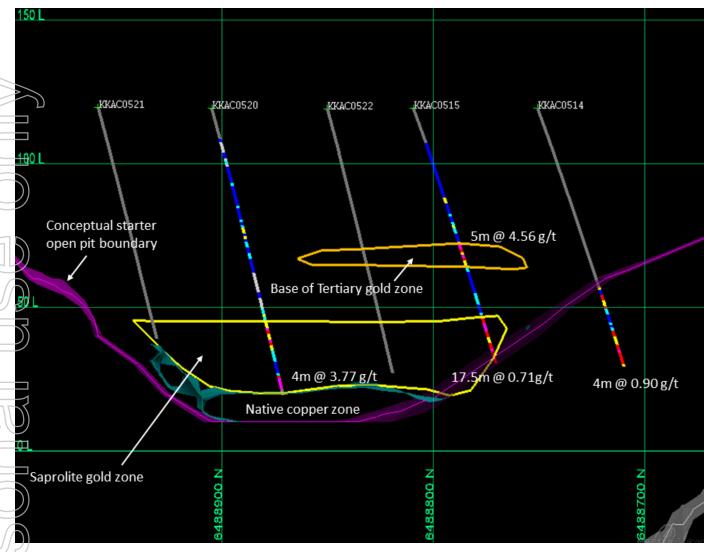
This release has been authorised on behalf of the Havilah Resources Limited Board by Mr Simon Gray.

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

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**Figure 3** Cross-section through recent West Kalkaroo aircore drillholes on a section line 30 metres northeast of the section shown in Figure 2. Assay results have not yet been received for drillholes KKAC0521, KKAC0522 and for the upper part of KKAC0514.

### **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 Person's Statements**

The information in this announcement that relates to Exploration Targets, Exploration Results, Mineral Resources and 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, a full-time employee and is a substantial shareholder. 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.



# **Appendix 1**

Sections 1 and 2 below provide a description of the sampling and assaying techniques in accordance with Table 1 of The Australasian Code for the Reporting of Exploration Results. Havilah confirms that it is not aware of any new information or data and that all material assumptions and technical parameters underpinning results published in the earlier market announcements continue to apply and have not materially changed.

Hole Number	Easting m	Northing m	RL m	Grid azimuth	Dip degrees	EOH depth metres
KKAC0514	454816	6488810	119	138	-70	95
KKAC0515	454787	6488842	119	138	-70	93.5
KKAC0516	454771	6488814	119	140	-65	95
KKAC0517	454746	6488839	119	140	-65	108
KKAC0518	454735	6488854	119	140	-65	105
KKAC0519	454721	6488871	119	140	-65	111
KKAC0520	454739	6488893	119	138	-75	103

## Section 1 Sampling Techniques and Data

77	<b>Cr</b> iteria	JORC Code explanation	Commentary
	Sampling techniques	<ul> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> </ul>	<ul> <li>Sample data was derived from aircore ('AC') drillholes as documented in the table above.</li> <li>AC assay samples averaging 2-3kg were riffle split at 1 metre intervals.</li> <li>All AC drill samples were collected into prenumbered calico bags and packed into polyweave bags by Havilah staff for shipment to the assay lab in Adelaide.</li> </ul>
		Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	
	Drilling	Drill type (eg core, reverse circulation, open-hole)	All AC holes were drilled using a 121mm



Criteria	JORC Code explanation	Commentary
techniques	hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, facesampling bit or other type, whether core is oriented and if so, by what method, etc).	blade bit. All samples were collected via riffle splitting directly from the cyclone.
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<ul> <li>Overall, AC sample recoveries were considered to be quite acceptable for interpretation and modelling purposes.</li> <li>The sample yield and wetness of the AC samples was routinely recorded in drill logs. Very few samples were too wet to split. No evidence of sample bias due to preferential concentration of fine or coarse material was observed.</li> <li>Sample recoveries were continuously monitored by the geologist on site and adjustments to drilling methodology were made to optimise sample recovery and quality where necessary.</li> </ul>
Logging	<ul> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>All AC samples were logged by an experienced geologist directly into a digital logging system with data uploaded directly into an Excel spreadsheet and transferred to a laptop computer.</li> <li>All AC chip sample trays and some back-up samples are stored on site at Kalkaroo.</li> <li>Logging is semi-quantitative and 100% of reported intersections have been logged.</li> <li>Logging is of a sufficiently high standard to support any subsequent interpretations, resource estimations and mining and metallurgical studies.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all subsampling stages to maximise representivity of samples.</li> <li>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.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>AC drill chips were received directly from the drilling rig via a cyclone and were riffle split on 1 metre intervals to obtain 2-3 kg samples.</li> <li>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 in the past and is checked with regular duplicates.</li> <li>All Havilah samples were collected in numbered calico bags that were sent to ALS assay lab in Adelaide.</li> <li>At ALS assay lab the samples are crushed in a jaw crusher to a nominal 6mm (method CRU-21) from which a 3kg split is obtained using a riffle splitter. The split is pulverized in an LM5 to 85% passing 75 microns (method PUL-23). These pulps are stored in paper bags.</li> <li>All samples were analysed for gold by 50g fire assay, with AAS finish using ALS method Au-AA26.</li> <li>All sample pulps are retained by Havilah and other elements (such as copper and rare-earth</li> </ul>



Criteria	JORC Code explanation	Coi	mmentary
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>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.</li> <li>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.</li> </ul>	•	elements) will be assayed using these pulps as required in the future.  Fire assay method Au-AA26 is a total gold analysis.  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 25 drill samples.  Assay data for laboratory standards and repeats for Kalkaroo were previously statistically analysed and no material issues were noted.
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.	•	Checking of the new Au assays against Au assays from adjacent earlier drillholes indicated good overall correlation. Rigorous internal QC procedures are followed to check all assay results. All data entry is under control of the responsible geologist, who is responsible for data management, storage and security.
Location of data points	<ul> <li>Discuss any adjustment to assay data.</li> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	•	The holes were surveyed using an electronic downhole camera in a stainless steel rod and inner tube.  Present drillhole collar coordinates were surveyed in UTM coordinates using a differential GPS system with an x:y:z accuracy of 20cm:20cm:40cm and are quoted in AGD66 Zone 54 datum.
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	•	Havilah drilling is aiming for a nominal 25m x 25m spacing of drillholes to define a resource in the base of Tertiary clays and to upgrade confidence levels in the saprolite gold zone. In general drillholes are angled perpendicular to the strike of the primary copper-gold mineralisation at West Kalkaroo.  Sample compositing was not used.
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>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.</li> </ul>	•	The drillhole azimuth and dip was chosen to intersect the mineralised zones as nearly as possible to right angles and at the desired positions to maximise the value of the drilling data.  At this stage, no material sampling bias is known to have been introduced by the drilling direction.



Criteria	JORC Code explanation	Commentary
Sample security	The measures taken to ensure sample security.	<ul> <li>AC chip samples are directly collected from the riffle splitter in numbered calico bags.</li> <li>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.</li> <li>There is minimal opportunity for systematic tampering with the samples as they are not out of the control of Havilah personnel until they are delivered to the assay lab.</li> <li>This is considered to be a secure and reasonable procedure and no known instances of tampering with samples occurred during the drilling programs.</li> </ul>
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>Ongoing internal auditing of sampling techniques and assay data has not revealed any material issues.</li> <li>Robert Dennis who was formerly employed by consulting firm RPM Global Asia Limited ('RPM') visited Kalkaroo during November 2016 and found field procedures to be of acceptable industry standard.</li> <li>Wanbao Mining and RPM completed independent re-sampling and assaying for Kalkaroo and found results to be reliable.</li> </ul>

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <li>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.</li> <li>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.</li> </ul>	<ul> <li>over Kalkaroo, owned 100% by Havilah.</li> <li>Exploration drilling is currently bei undertaken on Kalkaroo Mining Lease M 6498.</li> <li>A Native Tile Mining Agreement is in place f Kalkaroo. The agreement was execut between Havilah and the Ngadji</li> </ul>
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>Kalkaroo was explored by a number of may mining groups in the past including Place Pacific Limited, Newcrest Mining Limited a MIM Exploration Pty Ltd, who complet more than 45,000m of drilling in the region.</li> <li>All previous exploration data has be integrated into Havilah's databases.</li> </ul>
Geology	Deposit type, geological setting and style of mineralisation.	<ul> <li>In general the mineralisation style stratabound replacement and vein style copper-gold mineralisation within Willyar Supergroup rocks of the Curnamona Craton</li> <li>At Kalkaroo, the stratabound mineralisation</li> </ul>



Criteria	JORC Code explanation	Commentary
		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 mineralisation 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-rich alteration fronts, which are manifest as widespread finegrained magnetite in the lower sandy formations and as pervasive albite alteration, overprinted by later potassic veining and alteration.  Erosion in the Mesozoic and Tertiary period exposed the region to prolonged and deep weathering. Consequently, the original sulphide mineralisation 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.
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:	This information is provided in the accompanying table for the relevant drillholes.
	<ul> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level - elevation above sea level in metres) of the drill hole collar</li> </ul>	
	o dip and azimuth of the hole	



Crite	eria	JORC Code explanation	Commentary
		<ul> <li>down hole length and interception depth</li> <li>hole length</li> <li>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.</li> </ul>	
/ \-	a regation hods	<ul> <li>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.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	Not applicable as not reporting mineral resources.
betv mine widt intel leng	ntionship ween eralisation ths and rcept eths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>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').</li> <li>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</li> </ul>	<ul> <li>Downhole lengths are reported. Drillholes are typically oriented with the objective of intersecting mineralisation as near as possible to right angles, and hence downhole intersections in general are as near as possible to true width.</li> <li>For the purposes of the geological interpretations and resource calculations the true widths are always used.</li> <li>Not applicable as not reporting a mineral discovery.</li> </ul>
	inced orting	<ul> <li>drill hole collar locations and appropriate sectional views.</li> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral</li> </ul>	Not applicable as not reporting mineral resources.
		<ul> <li>Resource estimation.</li> <li>Where comprehensive reporting of all 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.</li> </ul>	
	stantive Ioration	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	Relevant geological observations are reported.



Criteria	JORC Code explanation	Commentary	
	contaminating substances.		
Further work	<ul> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large- scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	Additional drilling may be carried out in the future to explore strike and depth extensions and for resource delineation.	