

24 January 2020

Jupiter MT Anomaly Gravity Survey Results

HIGHLIGHTS

- Interpretation of new gravity survey data in the Jupiter area confirms an earlier circular gravity anomaly and highlights several other features of potential exploration interest.
- Provides independent corroborative support for Jupiter as an exciting conceptual copper-gold target.
- Further geophysical work is planned to assist in defining a drilling target.

Havilah Resources Limited ('Havilah' or 'Company') has completed review of data and announces results from a gravity survey in the vicinity of the Jupiter magnetotelluric ('MT')* anomaly target ('Jupiter') ([refer to ASX announcement of 27 October 2017](#)). Several features of interest are apparent in the new data, including a gravity anomaly (G2) lying north of Jupiter (**Figure 1**). Notably, G2 lies on a prominent north-northwesterly trending lineament that parallels the structural trend of the copper-gold mineralised Benagerie Ridge. This lineament coincides with the MT conductive zone, possibly indicating a connection (**Figure 2**). Also evident are a few cross-cutting northeasterly trending linear features, which are interpreted to be later off-setting faults.

Experienced geophysical contractor, Haines Surveys, completed field readings prior to Christmas 2019. High quality semi-detailed 500m x 200m spaced gravity data was collected between Jupiter and existing 500m x 100m spaced gravity data to the south. Prior to the current gravity survey there was only 2 km spaced gravity data available that was insufficiently detailed to allow meaningful interpretation.

As reported earlier, open file gravity data available on the SARIG website showed a distinctive circular gravity anomaly (G1) about 2 km across lying roughly 5 km south of the MT survey line ([refer to ASX announcement of 6 November 2019](#)). This feature was confirmed by the current gravity survey, which also revealed that it is located at the intersection of the north-northwesterly trending lineament mentioned above and an interpreted northeasterly orientated off-setting fault (**Figure 1**).

Since the MT survey was the result of 2 km spaced readings along a single survey line, the north-south extent of the Jupiter conductive zone is not certain at this stage. Additional short MT survey lines are required to achieve more detail for the Jupiter conductive zone. New MT data, to be collected in the future, will be combined with the gravity and other geophysical data with the objective of defining a drilling target to test Jupiter.

Commenting on the results of the recent gravity survey, Havilah's Technical Director, Dr Chris Giles, said:

"Jupiter is an intriguing conductive zone as defined by previous MT surveys.

"Our new gravity survey provides independent supporting data in the form of two discrete gravity anomalies lying on a regional north-northwesterly trending lineament that is coincident with the MT conductive zone.

"Our aim is to narrow down the geophysical indicators to a specific drilling target and the results of the present gravity survey will assist us in that regard" he said.

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

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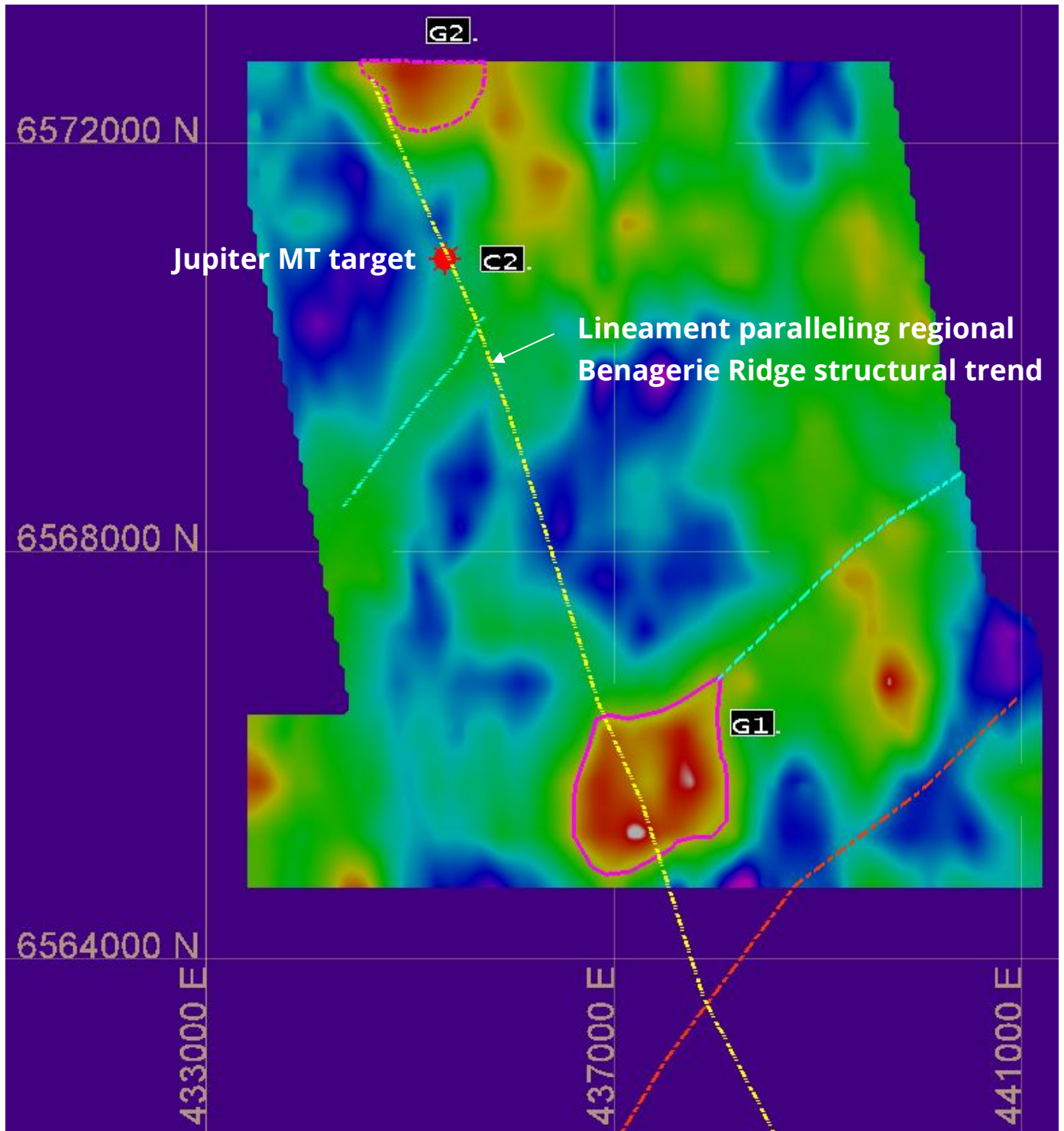


Figure 1 Residual gravity image (with the regional gravity gradient removed) over the area of the Havilah gravity survey. Two circular gravity anomalies, termed here G1 and G2, lie on a prominent north-northwesterly trending lineament (yellow line) that parallels the structural trend of the copper-gold mineralised Benagerie Ridge. A northeasterly trending cross structural direction is also evident (blue and red lines). At this stage the cause of the G1 and G2 gravity anomalies is undetermined.

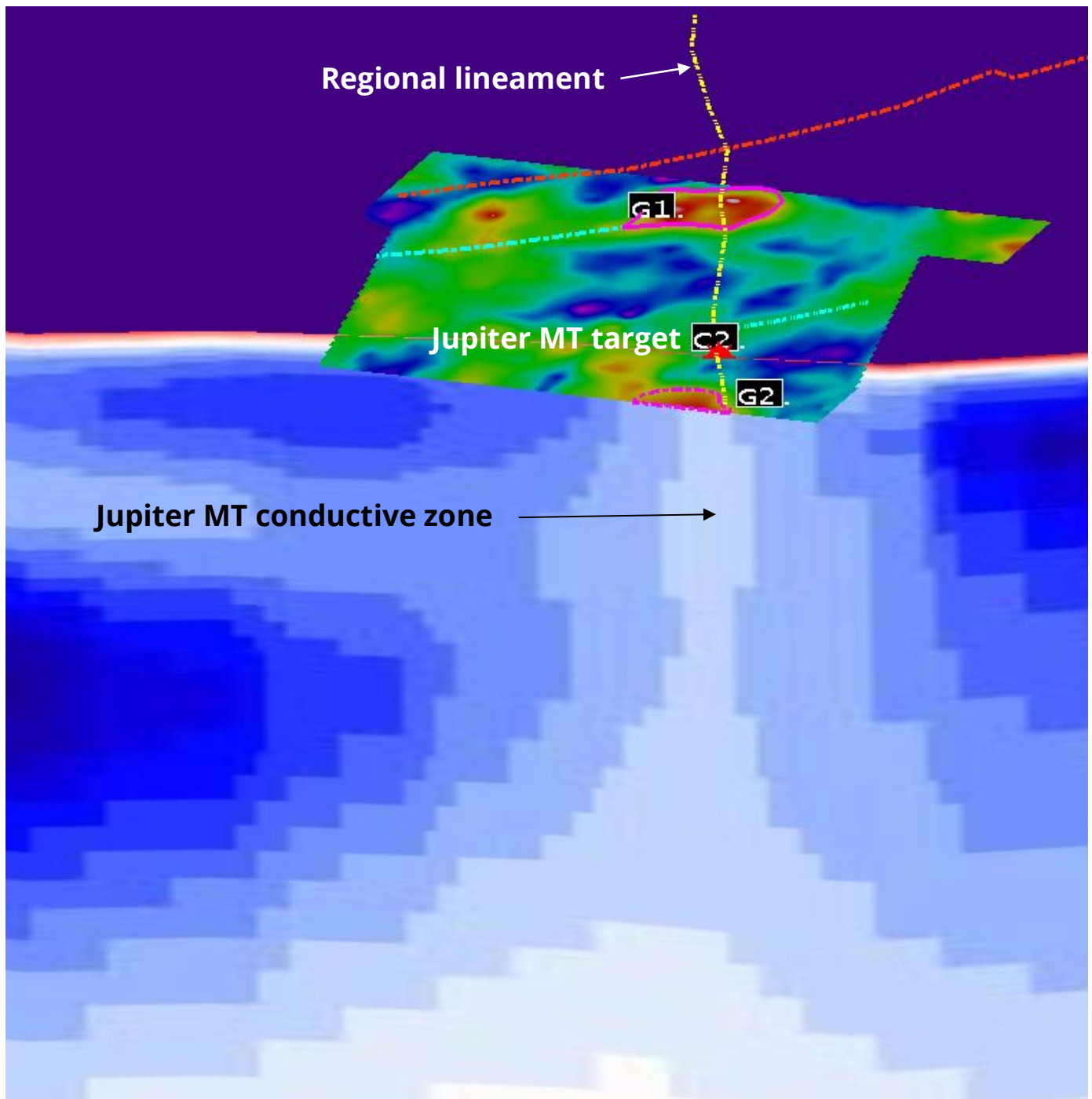


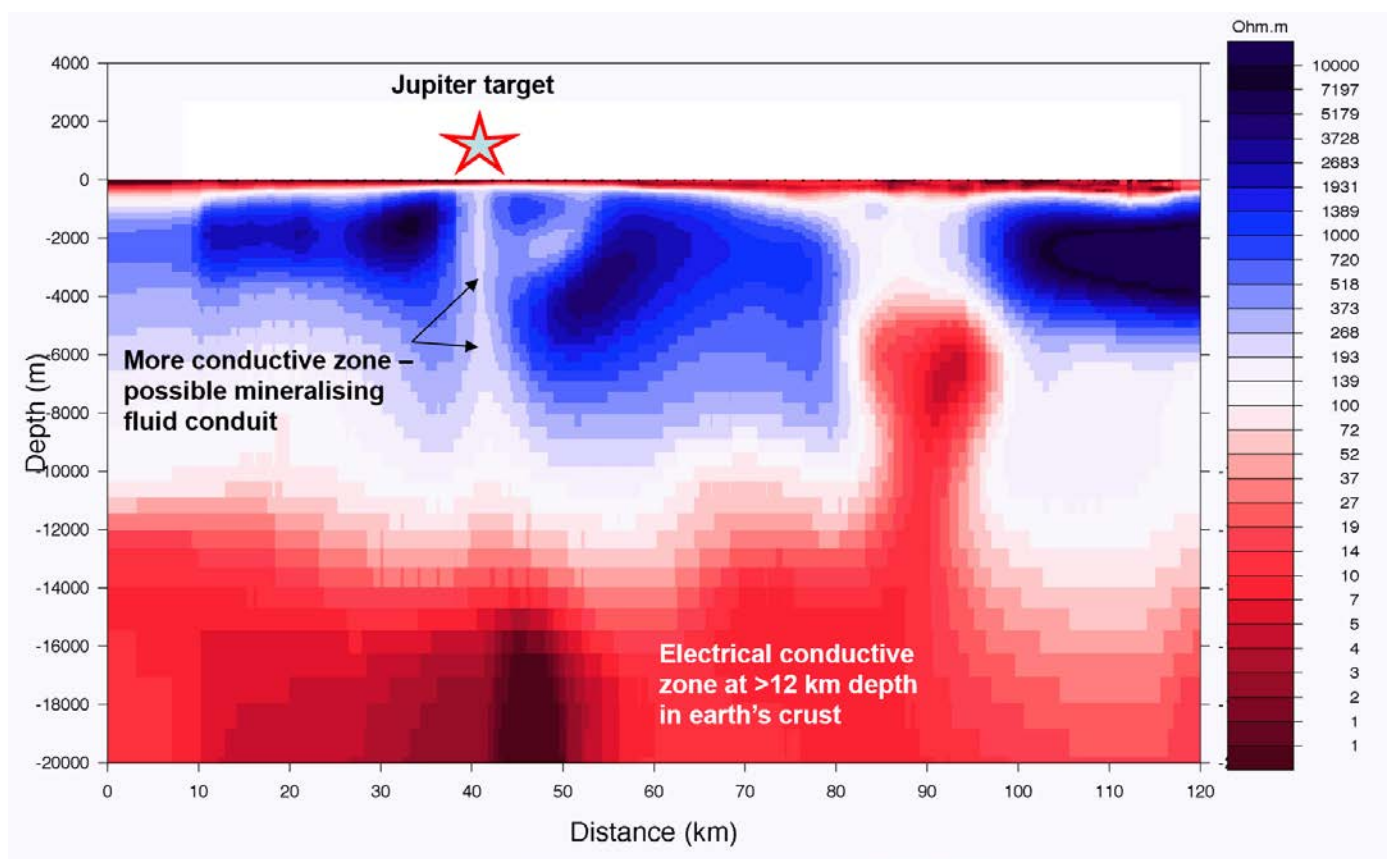
Figure 2 Oblique view of the above residual gravity image draped on the Jupiter MT cross section looking towards the south-southeast, showing the coincidence of the MT conductive zone and the north-northwesterly trending lineament (yellow line) along which the G1 and G2 gravity anomalies lie.

***About Jupiter and MT geophysics**

Jupiter was identified by Professor Graham Heinson and his team from the University of Adelaide during 2017, following collection and analysis of 2 km spaced MT readings across the Curnamona Craton (**Figure 3**). Notably, the volcanic rocks and associated granites in this part of the Curnamona Craton are almost identical in age and origin to those in the Gawler Craton that host the Olympic Dam deposit, a point which encouraged previous

explorers like MMG Limited and Newcrest Limited in their quest for IOCG (iron oxide copper gold) deposits in this region.

MT is a geophysical method that relies on measuring the very small natural time variations of the Earth's magnetic and electric fields to determine the electrical resistivity in the subsurface. The method is able to distinguish zones of varying electrical conductivity in the earth's crust to depths of more than 20 km. It is a powerful technique because it can potentially identify major conductive zones in the earth's crust that could represent the feeder zones to large metal accumulations. For example, research work in the Gawler Craton has identified a large conductive zone at depth beneath the Olympic Dam deposit with a distinctive conductive feature rising up towards the surface immediately beneath the orebody (**Figure 3**). This vertical feature has been interpreted as a possible feeder zone for metalliferous fluids from a more conductive and potentially copper rich part of the deep crust in this region.



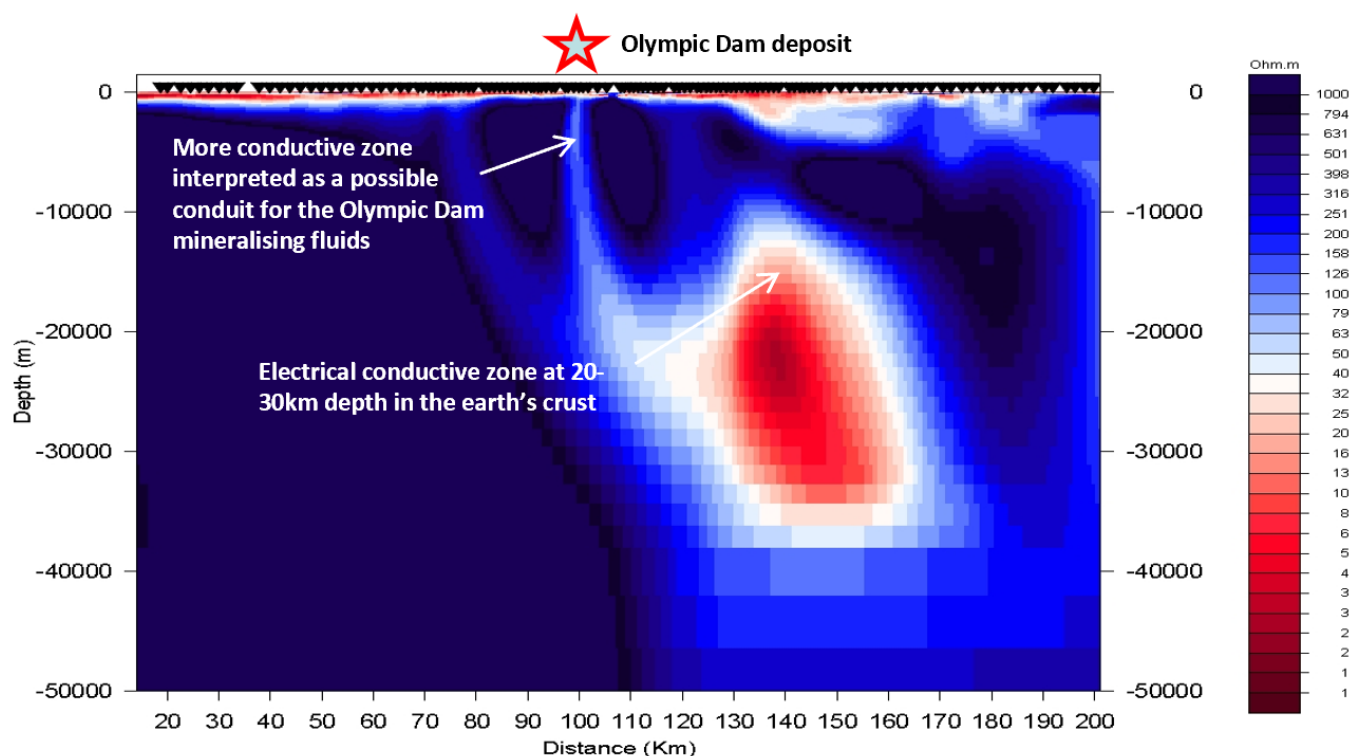


Figure 3 Comparison of MT conductive zones beneath Jupiter (top) and Olympic Dam (bottom). The MT anomaly sections are reproduced with the permission of Professor Graham Heinson from the University of Adelaide.

About gravity surveying

Gravity measurements are influenced by the density of underlying rocks in relation to the earth's surface. Hence, at a given depth denser rocks (which can include metalliferous deposits or their host rocks) will generate a positive gravity anomaly or gravity high at surface. Circular gravity features can sometimes indicate intrusive igneous rocks or a pipe-like alteration zone that can be host to mineralisation. While the source of the circular gravity features identified in this announcement are unknown at this stage, it does indicate the potential usefulness of gravity as a targeting tool in this region.

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 Statement

The information in this announcement that relates to Exploration Results and Mineral Resources 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, is employed by the Company on a consulting contract 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 data gathering techniques and methodology as it specifically relates to the gravity survey, 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.

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	- 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. - Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. - 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.	- The Lake Yandra gravity survey reported here consisted of 437 gravity stations in an irregular grid comprising 17 east-west lines, with a line spacing of 500m and station intervals of 200m. - The lines of irregular length were bounded in the west by GDA94 Zone 54 433621E, in the east by 441224E, in the south by 6564890N and in the north by 6572897N. - The line lengths ranged from 3100m to 800m. - Carrier phase GPS data were collected using Trimble R8 Glonass series geodetic receivers. - Gravity measurements were made using Scintrex CG3 Autograv instruments. Readings of 120 seconds were taken at base stations. Readings of 40 seconds were taken at all other gravity survey points. - Base station readings were taken at the beginning of the day and at the end of the day's fieldwork.
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).	Not applicable as no drilling.
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	Not applicable as no drilling.

Criteria	JORC Code explanation	Commentary
	<i>have occurred due to preferential loss/gain of fine/coarse material.</i>	
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.	Not applicable as no drilling.
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.	Not applicable as no samples collected.
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.	- The CG3 gravimeter applies an instrument drift correction to its final reading. - Any residual drifts between base station readings are corrected by the gravity post-processing software. - The instrument also applies appropriate Earth Tide Correction to its final gravity reading at each station. - The field gravity observations have been processed using standard formulae and constants to produce a Bouguer Anomaly for each station. - The meter reading as recorded in the raw Scintrex data file is corrected for instruments tilts, meter drift and Earth Tide. - All instrument calibration constants are contained in the daily gravity data files. - One GPS/gravity base station was established near the survey area that was tied into the base station established for the 2005 Lake Namba gravity survey.
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	32 gravity observations were repeated for quality control purposes, giving a repeat % of 7.3%. No material discrepancies were found. - Bouguer anomaly processing was performed using a country rock density of 2.67 g/cc.

Criteria	JORC Code explanation	Commentary
	<i>procedures, data verification, data storage (physical and electronic) protocols.</i> <i>Discuss any adjustment to assay data.</i>	Data for a range of densities was provided and was taken into consideration by the consultants during their interpretation.
Location of data points	<i>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.</i> <i>Specification of the grid system used.</i> <i>Quality and adequacy of topographic control.</i>	- Gravity readings were taken at 200m intervals along lines spaced 500m apart. - Locations of data points were accurately measured using Trimble R8 Glonass series geodetic receivers. - Measurements to existing control were made using Static techniques. All static baselines were processed to double difference fixed solutions resulting in horizontal and vertical precision of approximately 2cm. - Measurements for detailed gravity observations were made using Real Time Kinematic (RTK) techniques giving horizontal and vertical precision of at least 5cm. - Static baseline processing and RTK processing was done using Trimble Business Centre Version 2.5 software. - GPS horizontal coordinates are set on the MGA94 datum from which WGS84 Latitude and Longitude is derived and is set on the MGA94 Zone 54. - The GPS ellipsoidal heights (WGS84 datum) have been corrected to orthometric heights (AHD) using the AusGeoid 98 geoid model for the control and the gravity stations.
Data spacing and distribution	<i>Data spacing for reporting of Exploration Results.</i> <i>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.</i> <i>Whether sample compositing has been applied.</i>	Gravity readings were taken at 200m intervals along lines spaced 500m apart
Orientation of data in relation to geological structure	<i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i> <i>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.</i>	- The gravity lines were orientated east-west in order to cross known region structural trends that range from northeasterly to northwesterly. - Interpretation of the gravity data appears to confirm known regional structural directions.
Sample security	<i>The measures taken to ensure sample security.</i>	- Haines Surveys, who collected the gravity data, are very experienced and reputable contractors who specialise in gravity surveys. - They are used by many large companies and have an impeccable record of delivering high quality, accurate and properly corrected gravity data.
Audits or reviews	<i>The results of any audits or reviews of sampling techniques and data.</i>	The raw data was studied and interpreted by two experienced consultants.

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 exploration licences held by Havilah Resources Limited.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	- Previous regional 2km spaced gravity data was available, but is too widely spaced for detailed interpretation purposes. - The present gravity survey connected in the south with the 2005 Lake Namba gravity survey which had 500m x 100m gravity readings. 12 readings were duplicated from the 2005 survey with good correlation obtained.
Geology	Deposit type, geological setting and style of mineralisation.	- The region is underlain by the Willyama Supergroup rocks of the Curnamona Craton and the unconformably overlying Mesoproterozoic Benagerie Volcanics. - These rocks are overlain by younger, barren cover sediments that mask any mineralisation. - Mineralisation may include ISG, IOCG, stratabound and skarn copper-gold styles.
Drill hole information	- A summary of all information material to the understanding 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 - 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.	Not applicable as no drilling.
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	Not applicable as not reporting mineral resources.

Criteria	JORC Code explanation	Commentary
	<i>in detail.</i> <i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i>	
Relationship between mineralisation widths and intercept lengths	<i>These relationships are particularly important in the reporting of Exploration Results.</i> <i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i> <i>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').</i>	Not applicable as no drilling
Diagrams	<i>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.</i>	Provided in announcement.
Balanced Reporting	<i>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.</i> <i>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.</i>	Not applicable as not reporting mineral resources.
Other substantive exploration data	<i>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.</i>	Relevant geological observations are reported in the text.
Further work	<i>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large- scale step-out drilling).</i> <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i>	Additional geophysical surveys may be carried out in the future in order to assist in the delineation of drilling targets.