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## THOR MINING PLC

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AIM & ASX Listings: Shares: THR

Directors: Michael Billing David Thomas Alastair Middleton Richard Bradey Mark Potter

## Key Projects:

• Tungsten Molyhil NT Pilot Mountain USA

• Copper Kapunda SA Moonta SA Company Announcements Office ASX Securities Limited, 20, Bridge Street, Sydney, N.S.W. 2000

## PRELIMINARY DRILLING RESULTS AT KAPUNDA PROJECT

The directors of Thor Mining Plc ("Thor") (AIM, ASX: THR) are pleased to advise positive preliminary results from the initial hydrogeological drilling program at the Kapunda ISR (Insitu Recovery) copper project carried out by EnviroCopper Limited.

EnviroCopper Limited, via subsidiary Environmental Copper Recovery Pty Ltd, has entered into an agreement to earn, in two stages, up to 75% of the rights over metals which may be recovered via in-situ recovery ("ISR") contained in the Kapunda deposit from Australian listed company, Terramin Australia Limited ("Terramin" ASX: "TZN"). Thor hold a 25% interest in EnviroCopper Limited with rights to increase that interest to 30%.

A total of 3 holes were drilled and two screened wells installed to carry out initial hydrogeological investigations including

- Baseline properties including water level, pH and EC
- Groundwater geochemistry profile with depth including salinity and metal concentration
- Flow rates measured by depth and achievable production well yields
- Storage coefficient
- Effective Porosity (pores that allow the transfer of water) as % by volume
- Hydraulic connectivity between wells located ~15m apart
- Permeability (also described as hydraulic conductivity)

#### **HIGHLIGHTS FOR POTENTIAL ISR OPERATIONS:**

- The water table is quite shallow starting around 11-12m and there is connectivity between the screened intervals along the predominant fracture direction. This will be verified with the hydrogeological testing program to be carried out.
- The fracture zone contains significant copper mineralisation which is expected to be amenable to in situ recovery intersected in all three holes .

The next stage of the work includes large scale column leach recovery tests leading on to a full scale field trial.



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## **MINERALISATION HIGHLIGHTS (PRELIMINARY):**

The following results obtained via portable X-Ray Fluorescence ("XRF") determination should be considered preliminary and subject to confirmation by subsequent geochemical analysis, with results due within four weeks. The geochemical analysis results may vary from those obtained from XRF.

- The pilot hole (KPFRT01) encountered 66 metres @ 0.27% Cu including 5m @ 0.72% Cu and 11 metres @ 0.54% Cu;
- KPFRT02 intersected from 8m 23m @ 0.49% Cu to end of hole
- KPFRT03 intersected from 22m, 6m @ 0.47% Cu to end of hole .

## Mr Mick Billing, Executive Chairman, commented:

"It is very exciting to have confirmation of both consistency of mineralisation and possible hydrogeological connectivity along strike in the facture zone. This adds considerable weight to the potential for a successful ISR operation in due course."

"It is also pleasing to note that the preliminary copper grades are above the average for the resource. We are very keen to have laboratory assays to confirm these, and also to provide any gold values, as gold is most unlikely to be picked up in portable XRF readings."

"These holes were drilled on the very southern tip of the main resource area, and previously conducted IP surveys further south show additional chargeable anomalies which should be investigated to see if they contain additional mineralisation, which could significantly extend the resource."

## **Drilling Detail**

The bores were drilled and installed by Watson drilling who have installed a large number of production bores in the Beverly and Honeymoon ISR projects.

A pilot hole was first drilled to assess the fracture zone, following this, two wells were installed with in line screens and K-Packers; KPFRT02 was drilled to 29m, cased with 177mm class 12 PVC casing and 100mm -slotted PVC screen installed from 20.6m-28.6m. KPFRT03 was drilled to 29m, fitted with similar casing and 100mm slotted PVC screen installed from 20.5m – 29m.



Figure 1: Map showing Kapunda project area



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Hole ID	Prospect	East GDA94 Zone54	North GDA94 Zone54	Elev ASL (m)	Azi	Dip	Depth (m)	Preliminary XRF Intercept summary
KPFRT01	Kapunda	308641	6196659		0	-90	51	66m @ 0.27% Cu including 5m @ 0.72% Cu from 3m and 11m @ 0.54% Cu from 19m
KPFRT02	Kapunda	308640	6196669		0	-90	178.2	KPFRT02 from 8m, 23m @ 0.49% Cu to end of hole
KPFRT03	Kapunda	308639	6196660		0	-90	81	KPFRT03 from 22m, 6m @ 0.47% Cu to end of hole

### Table A: Summary of Kapunda preliminary XRF results



Figure 2: Kapunda drill collar location plan



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For further information, please contact:

## THOR MINING PLC

Mick Billing, Executive Chairman +61 8 7324 1935

Updates on the Company's activities are regularly posted on Thor's website <u>www.thormining.com</u>, which includes a facility to register to receive these updates by email, and on the Company's twitter page @ThorMining.

### **Competent Persons Report**

The information in this report that relates to exploration results and Mineral Resources is based on information compiled by Leon Faulkner, who holds a BSc in geology and who is a Member of The Australasian Institute of Geoscientists. Mr Faulkner is an employee of Environmental Copper Recovery Pty Ltd. He has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Leon Faulkner consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

## About Thor Mining PLC

Thor Mining PLC (AIM, ASX: THR) is a resources company quoted on the AIM Market of the London Stock Exchange and on ASX in Australia.

Thor holds 100% of the advanced Molyhil tungsten project in the Northern Territory of Australia, for which an updated feasibility study in August 2018<sup>1</sup> suggested attractive returns.

Adjacent Molyhil, at Bonya, Thor holds a 40% interest in deposits of tungsten, copper, and vanadium, including an Inferred resource for the Bonya copper deposit<sup>2</sup>.

Thor also holds 100% of the Pilot Mountain tungsten project in Nevada USA which has a JORC 2012 Indicated and Inferred Resources Estimate<sup>3</sup> on 2 of the 4 known deposits. The US Department of the Interior has confirmed that tungsten, the primary resource mineral at Pilot Mountain, has been included in the final list of Critical Minerals <sup>6</sup>2018.

Thor is also acquiring up to a 30% interest Australian copper development company EnviroCopper Limited, which in turn holds rights to earn up to a 75% interest in the mineral rights and claims over the resource on the portion of the historic Kapunda copper mine in South Australia recoverable by way of in situ recovery<sup>4</sup>, and also holds rights to earn a 75% interest in portion of the Moonta Copper project also in South Australia, and is considered amenable to recovery by way of in situ recovery<sup>5</sup>.

Thor has an interest in Hawkstone Mining Limited, an Australian ASX listed company with a 100% Interest in a Lithium project with a JORC compliant resource in Arizona, USA.

Finally, Thor also holds a production royalty entitlement from the Spring Hill Gold project<sup>6</sup> of:

- A\$6 per ounce of gold produced from the Spring Hill tenements, sold for up to A\$1,500 per ounce; and
- A\$14 per ounce of gold produced from the Spring Hill tenements, sold for amounts over A\$1,500 per ounce.

Notes



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<sup>1</sup> Refer ASX and AIM announcement of 23 August 2018

<sup>2</sup> Refer ASX and AIM announcement of 26 November 2018

<sup>3</sup> Refer AIM announcement of 13 December 2018 and ASX announcement of 14 December 2018

<sup>4</sup> Refer AIM announcement of 10 February 2016 and ASX announcement of 12 February 2018

<sup>5</sup>Refer AIM announcement of 5 March 2019 and ASX announcement of 6 March 2019

<sup>6</sup>Refer AIM announcement of 26 February 2016 and ASX announcement of 29 February 2016.

## JORC Code, 2012 Edition – Table 1 report template

## Section 1 Sampling Techniques and Data

Criteria	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> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>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.</li> </ul>	Rotary Air Blast drilling with face sampling blade bit was used to obtain one metre interval samples. Some samples were wet. Subsamples of approximately 2-3kg will be taken from each interval using riffle splitter for geochemical analysis. XRF subsamples and Chip tray samples were collected, logged and photographed. Industry standard QAQC protocol was adopted with XRF calibrated during the program. A comparison with another handheld XRF was undertaken on a subset of samples and showed no significant bias.
Drilling techniques	• Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. 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).	Rotary Air Blast drilling
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>	Samples were weighed from a selection of holes to gauge sample recovery. Samples Most were consistently within the range of 10 to 15kg apart from some samples at the water table interface where obtaining return was difficult for a meter or two
Logging	<ul> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support</li> </ul>	Hole cuttings were logged geologically and photographed for the entire length



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Criteria	JORC Code explanation	Commentary
	<ul> <li>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>	of each hole. Mineralised and unmineralised zones were easily determined from XRF determination.
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 sub-sampling 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</li> </ul>	Subsamples for independent laboratory analyses will taken by riffle splitter. The majority of samples were dry. Wet samples were noted in the logs. Sample size of 2-3kg is appropriate for RAB samples with a maximum particle size of 6mm. Preliminary XRF determination <u>not</u> to be used for resource estimation
Quality of assay data and laboratory tests	<ul> <li>Of the material being samplea.</li> <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>	Industry standard sample preparation finishing with sample pulverisation to 80% passing 75µm. with assay by peroxide fusion and ICP-MS. The technique is considered appropriate for the analyte suite. Industry standard QA/QC protocol is to be implemented in the assay process.
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	Significant intersections reported correspond with visual indications in samples. No further independent verification has been undertaken.
Location of data points	<ul> <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>	All hole collar locations will be surveyed by handheld GPS. Grid system used is GDA94, zone 54.



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Criteria	JORC Code explanation	Commentary
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>	Drill holes are spaced at 10 metre centres . This spacing is considered appropriate for the hydrogeologic testing to be carried out. Samples have not been composited.
Orientation of data in relation to geological structure	<ul> <li>Whether sample compositing has been applied.</li> <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>	Hole orientations are appropriate for the placement of wells in the target mineralised zones. Holes are drilled down fracture zone and along fracture strike.
Sample security	• The measures taken to ensure sample security.	No unauthorised company personnel visited the site during operations. Assay samples were collected from each hole immediately after drilling. Samples were transported for safe storage to Adelaide office where they will be securely packaged for transport to the laboratory. All
Audits or reviews	• The results of any audits or reviews of sampling techniques and data.	None

## Section 2 Reporting of Exploration Results

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 licence to operate in the area.</li> </ul>	The Kapunda project is located on EL6198 held by Terramin Exploration Pty Ltd EL6198 is a mature exploration licence subject to ongoing biennial renewal.
Exploration done by other parties Geology	<ul> <li>Acknowledgment and appraisal of exploration by other parties.</li> <li>Deposit type, geological setting and style of</li> </ul>	Previous drilling and exploration has been undertaken by numerous companies since the 1960's through to the 1990's Fracture hosted mineralisation with well
	mineralisation.	developed supergene zone.

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Drill hole	A summary of all information material to the	This information is tabulated in detail
Information	<ul> <li>understanding of the exploration results including a tabulation of the following information for all Material drill holes: <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> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </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>	within the announcement
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg 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>	All samples are 1m intervals, no cut has been applied to grades No metal equivalents were reported.
Relationship between mineralisation widths and	<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</li> </ul>	Drilling and well installation is placed within the fracture zone