

# Manganese Formation Extended & Further High-Grade Samples

## HIGHLIGHTS

- ➔ Geological mapping continues to **extend** the strike of the manganese-forming Noni Formation
  - **47km of strike** defined to date (Figure 1)
  - Lalena Mn Prospect **53.1% Mn\***, **44.8% Mn\*** and **46.1% Mn\*** from pXRF rock chip samples
  - Additional **28.1% Mn** (pXRF) sample located **7 km** northeast of Lalena (Figure 1) **along strike**
- ➔ In-country sample preparation and pXRF assay facility **up and running** with a clear pathway for sample export through customs
- ➔ Preparations for a **high-grade** manganese metallurgical sample for **market appraisal** underway
- ➔ Applications to commence **trenching and drilling** have been submitted to allow testing of the **high-grade** manganese mineralisation defined within the three granted Exploration and Evaluation Licenses

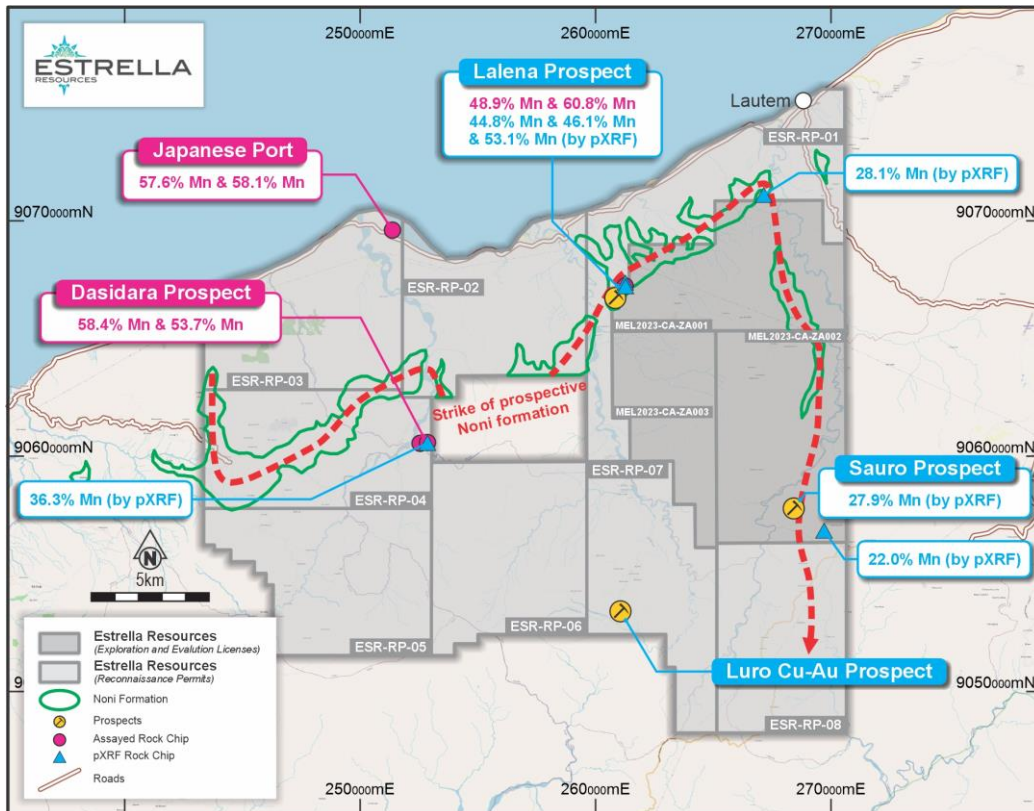


Figure 1: Location of pXRF manganese samples within Estrella’s tenure and the mapped extension of the Noni Formation

\*pXRF values have been averaged from 5 determinations per sample. PXRF results that are announced in this report are preliminary only. The use of the PXRF is an indication only of the order of magnitude of expected final assay results. The samples that are the subject of this report will be submitted for laboratory assay and some variation from the results presented herein should be expected.

For personal use only

Estrella Resources Limited (**ASX: ESR**) (**Estrella** or the **Company**) is pleased to announce an update to exploration activities in Timor-Leste where mapping by the Company's in-country team has defined an **additional ~20km of strike** extension to the manganese-forming Noni Formation.

**Commenting on the anticipated work program, Estrella Managing Director Chris Daws said:**

*"Our teams are working hard to define the limits of the extensive high grade manganese occurrences located within our granted Timor-Leste concessions. We are awaiting confirmation assay results from numerous pXRF results already released and have a large number of new samples being prepared for analysis.*

*We are working quickly to determine whether we may have an early opportunity to commence the first ever manganese exports from Timor-Leste to take advantage of recent supply disruptions. Initially the plan is to provide bulk 30 tonne samples to potential end users for metallurgical testing. This material is readily available to the Company at numerous sites identified to date within our concessions and are located very close to logistical infrastructure for ease of collection and transportation to port.*

*We are confident that we have priority drill targets after only a short period of field work and is testament of the prospectivity of our concession areas and the work of our field teams.*

*I look forward in providing further exploration news in the coming weeks and updating our shareholders to the progress being made in what is arguably the greatest new frontier for exploration."*

Lateritisation of the ~47km outcropping Noni mudstone is responsible for forming manganese banding and nodule development near to the surface along the length of the Formation. Further concentration of these high-grade occurrences occurs within the numerous streams and rivers throughout the area (see ASX announcements 3-April 2024, 12-April 2024, 19-April 2024 and 31-May 2024).

With the arrival of laboratory equipment in Dili the Company has now set up basic sample preparation facilities at its office in Dili, allowing samples to be crushed and pulverised for more accurate pXRF determinations. There is currently approximately 70 samples to be prepared which the team is anticipated to fully process in the next week.

Meanwhile, the Company has successfully prioritised a handful of samples and has brought pulverised material back to Australia through both Timor-Leste and Australian customs authorities for analysis by ALS in Perth post quarantine measures.

Recent rock-chip sample determinations are presented in Table 1 below:

**Table 1: pXRF Results for additional rock samples brought back to Australia for analysis**

PROSPECT	WGS84_Z52 E	WGS84_Z52 N	Sample ID	Status	pXRF Mn%	pXRF Fe%	Mn:Fe
Lalena	260745	9066403	LRG026	Crushed	53.1	n/a	
Lalena	261259	9067376	CBR114502	Uncrushed	46.1	n/a	
Lalena	261272	9067221	LRG032	Uncrushed	44.8	0.07	640
Dasidara	252863	9060560	LRG041	Uncrushed	36.3	0.48	76
ESR-RP-01	267161	9071145	CBR114506	Uncrushed	28.1	1.9	15
Sauro	269717	9056832	LRG071	Uncrushed	22	7.97	3

Figure 2 shows a manganese occurrence within Reconnaissance Permit ESR-RP-01 located 7km to the northwest of the Lalena Manganese Prospect where manganese bedding just below the surface has been exposed by recent erosion.

Sample CBR114506 was taken in this area which is directly along strike from the Lalena Prospect and the exploration team will concentrate efforts to map the geology between these two areas.

For personal use only



**Figure 2: Location of sample CBR114506 showing manganese formation just below the surface in Reconnaissance Permit ESR-RP-01, 7km along strike from the Lalena Prospect; greater than 80% of the sample was logged as manganese and iron oxides.**

The exploration team is currently compiling the recent mapping within the Concession areas which will form the basis of a technical report to be submitted to the Timor-Leste regulatory body, the Autoridade Nacional dos Minerais (ANM).

The submission of this report will include a justification to begin ground-work in the form of trenching and possibly drilling to assist the Company in quantifying sub-surface manganese mineralisation ahead of any future resource work.

The Company will continue exploration mapping and sampling across the tenements whilst employing local workers to trench priority locations that require further investigation at depth. Systematic trenching will add greatly to the geological understanding of the formation and distribution below surface of this valuable commodity.

## **Bulk Sample for Market Appraisal**

Figure 3 shows a stockpile of around 30-40 tonnes of high-grade manganese at a known historical Japanese WW2 port. Two grab samples from this location returned laboratory assays of 57.1% Mn and 58.1% Mn from ALS. The stockpile was a historical collection from several local sources, according to local information, and is reasonably representative of the bulk of high-grade mineralisation within the area.

The stockpile is on the coast and the Company is in the process of acquiring permission from the ANM and the Minister to utilise this stockpile as a representative sample for Market Appraisal to prospective customers.



Figure 3: Manganese stockpile from Japanese WW2 port location where previously announced manganese and iron oxide grab samples assayed 57.1% Mn and 58.1% Mn from ALS.

The Board has authorised for this announcement to be released to the ASX.

#### FURTHER INFORMATION CONTACT

**Christopher J. Daws**  
**Managing Director**  
**Estrella Resources Limited**  
**+61 8 9481 0389**  
[info@estrellaresources.com.au](mailto:info@estrellaresources.com.au)

**Media:**  
**David Tasker**  
**Managing Director**  
**Chapter One Advisors**  
**E: [dtasker@chapteroneadvisors.com.au](mailto:dtasker@chapteroneadvisors.com.au)**  
**T: +61 433 112 936**

#### Cautionary Statement of pXRF

PXRF results that are announced in this report are preliminary only. The use of the PXRF is an indication only of the order of magnitude of expected final assay results. The samples that are the subject of this report will be submitted for laboratory assay and some variation from the results presented herein should be expected.

#### Competent Person Statement

The information in this announcement relating to Exploration Results is based on information compiled by Beau Nicholls, who is the Exploration Manager for Estrella Timor-Leste, and a fellow of The Australasian Institute of Geoscientists, and Mr Steve Warriner, who is the Group Exploration Manager for Estrella Resources and a member of the Australian Institute of Geoscientists. Mr. Nicholls and Mr. Warriner have sufficient experience relevant to the style of mineralisation and type of deposit under consideration, and to the activity 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 Resource and Ore Reserves". Mr Nicholls and Mr Warriner consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

#### Forward Looking Statements

This announcement contains certain forward-looking statements which have not been based solely on historical facts but, rather, on ESR's current expectations about future events and on a number of assumptions which are subject to significant uncertainties and contingencies many of which are outside the control of ESR and its directors, officers and advisers.

For personal use only

## APPENDIX 1 JORC TABLE 1 – TIMOR-LESTE EXPLORATION

### Section 1 - Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Nature and quality of sampling (e.g. 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. In cases where 'industry standard' work has been done this would be relatively simple (e.g. '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 (e.g. submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>Determination of mineralisation has been based on geological mapping, visual mineral estimates and confirmation of metallic concentration using a Bruker S1 Titan Portable XRF instrument.</li> <li>pXRF determinations are an average of 5 readings per rock sample and three readings per crushed sample. Samples are crushed in Dili to 100% passing 1mm.</li> <li>Manganese standards are introduced at a rate of 1:5 for pXRF determinations to ensure correct calibration of the instrument.</li> <li>Initial rock-chip samples were taken and dispatched through customs and quarantine to ALS in Malaga for multi-element analysis.</li> <li>Assay results: Samples were analysed using a 4-acid digest, ME-MS for 61 elements and ME-XRF for over-grade manganese on a 50g sub-sample.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>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).</li> </ul>	<ul style="list-style-type: none"> <li>No drilling has been undertaken to date.</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>No drilling has been undertaken to date.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Rock-chip samples were geologically logged for mineral content prior to sending for assay or screening by pXRF.</li> <li>Oxide mineral identification is qualitative and best supported by pXRF or assay analysis</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <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</li> </ul>	<ul style="list-style-type: none"> <li>Sample sizes are appropriate to the grain size of the mineralisation.</li> <li>The exploration program is in its very early stages and initial sample sizes were kept small due to freight and customs / quarantine restrictions. They are not considered representative of the bulk of mineralisation.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p>sub-sampling stages to maximise representivity of samples.</p> <ul style="list-style-type: none"> <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>	
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <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 (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</li> </ul>	<ul style="list-style-type: none"> <li>Samples are selected based on geological logging. Samples are dispatched to an accredited commercial laboratory in Perth for analysis.</li> <li>Preliminary samples are being analysed at ALS in Malaga using a 4-acid digest, ME-ICP for 61 elements and all samples are also being tested for Pt, Pd and Au by fire assay and ICP-MS finish on a 50g sub-sample.</li> <li>Standards and blanks have not been included in this early phase of the program.</li> <li>Current field samples are being analysed by pXRF. The Cautionary statement is included when assessing pXRF.</li> <li>pXRF determinations are an average of 5 readings per rock sample and three readings per crushed sample. Samples are crushed in Dili to 100% passing 1mm.</li> <li>Manganese standards are introduced at a rate of 1:5 for pXRF determinations to ensure correct calibration of the instrument.</li> </ul>
<b>Verification of sampling and assaying</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>No prior modern exploration has been conducted in the area.</li> <li>No adjustments to assay data were undertaken.</li> </ul>
<b>Location of data points</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>GPS equipment using MGA94, Zone 52 coordinate system with an accuracy of +/- 5m.</li> <li>Topographic control using 30m spaced satellite point data.</li> </ul>
<b>Data spacing and distribution</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>No systematic sampling has been conducted at this early stage.</li> <li>Sample spacing is not yet sufficient to establish continuity of grade or geology.</li> <li>No composites have been taken.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>No orientation-based sampling bias has been identified.</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>Exported samples are in the possession of ESR personnel from field collection to</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>customs submission in Darwin. From there a courier picks up and delivers them to the laboratory in Perth.</p> <ul style="list-style-type: none"> <li>• Non-exported samples remain with ESR personnel.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>	<ul style="list-style-type: none"> <li>• No independent audit or review has been undertaken.</li> </ul>

## Section 2 - Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <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 style="list-style-type: none"> <li>Exploration and Evaluation Concessions MEL2023-CA-ZA001, MEL2023-CA-ZA002 and MEL2023-CA-ZA003 are awarded to Estrella Murak Rai, forming the joint-venture between Estrella Resources Representante Permanente (70%) and Murak Rai Timor (30%).</li> <li>Reconnaissance Permits ESR-RP-01, ESR-RP-02, ESR-RP-03, ESR-RP-04, ESR-RP-05, ESR-RP-06, ESR-RP-07 and ESR-RP-08 are awarded to Estrella Resources Limited Representante Permanente (100%)</li> <li>Estrella Resources Limited Representante Permanente is registered in Timor-Leste and is a wholly-owned subsidiary of Estrella Resources Limited (Australia).</li> <li>All of the Concessions and Permits are current and in good standing.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>The first exploration was conducted by Allied Mining Corporation in 1937 during which mineral potential was discovered. Very small scale mining of manganese, gold and construction material was conducted. The exploration was not systematic and hampered by difficult access.</li> <li>Other work in the early 2000's has been conducted by the Pacific Economic Cooperation Council -PECC Minerals Network to assist Timor-Leste to understand and develop its minerals potential.</li> <li>Other local geologists and companies have sporadically explored the area however there has been no documentation collected nor systematic exploration to quantify mineral occurrences.</li> <li>No minerals drilling has taken place.</li> <li>No close-spaced geophysics has taken place.</li> <li>No systematic, modern exploration has taken place.</li> <li>The Geological Institute of Timor-Leste (IGTL) has recently (and still is) conducting stratigraphic analysis and fossil dating to reconstruct the geological history of Timor-Leste.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>The current Permits host three main forms of manganese mineralisation.</li> <li>Primary mineralisation can be found in stratigraphic banded cherts and banded irons formed from direct precipitation of manganese onto the sea floor. Evidence for both microbial and inorganic processes exist.</li> <li>Additional primary mineralisation exists as pisolithic concretions and direct precipitates within deep-sea limestones.</li> <li>Secondary mineralisation exists in the form of small to extremely large clasts of manganese mineralisation associated with the Noni Formation, composed mostly of cherts, banded irons and muds. This unit represents an under-sea basin.</li> <li>Tertiary mineralisation exists where high</li> </ul>



Criteria	JORC Code explanation	Commentary
		<p>rainfall and erosion has sorted and concentrated detrital manganese into river paleo-channels.</p> <ul style="list-style-type: none"> <li>Alluvial gold mineralisation has been reported in the area however no exploration has been undertaken.</li> <li>Estrella will use and expand upon the current known stratigraphy to evaluate and document mineralisation styles and relate them back to the tectono-stratigraphic genesis of the area.</li> </ul>
<b>Drill hole information</b>	<ul style="list-style-type: none"> <li>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: <ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>No drilling has been undertaken in the area.</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>Exploration results with all relevant drillhole information are reported in the body of the text.</li> <li>No aggregation methods have been used.</li> <li>Metal equivalent values have not been used.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <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> </ul>	<ul style="list-style-type: none"> <li>Any relationships have been discussed within the body of the text.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <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 drill hole collar locations and appropriate sectional views.</li> </ul>	<ul style="list-style-type: none"> <li>Relevant diagrams have been included within the main body of text.</li> </ul>
<b>Balanced Reporting</b>	<ul style="list-style-type: none"> <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>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high</li> </ul>	<ul style="list-style-type: none"> <li>No new information has been withheld.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</i></p>	
<p><b>Other substantive exploration data</b></p>	<ul style="list-style-type: none"> <li><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></li> </ul>	<ul style="list-style-type: none"> <li>No other substantive data exists as the program is in its early stages.</li> <li>All observations are discussed within the body of the text.</li> </ul>
<p><b>Further work</b></p>	<ul style="list-style-type: none"> <li><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></li> <li><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></li> </ul>	<ul style="list-style-type: none"> <li>Further work by ESR will include systematic mapping and sampling along with stratigraphic and structural classification.</li> </ul>

For personal use only