

**ASX ANNOUNCEMENT**

Heavy Rare Earths Limited (ASX: HRE)  
12 July 2023

**METALLURGICAL PROGRAM DELIVERS  
TWO-FOLD GRADE INCREASE AND UP TO  
91.3% EXTRACTION OF MAGNET RARE EARTHS**

- Sizing work indicates simple, low-cost screening capable of delivering two-fold increase in rare earths grade
- Diagnostic leaching test work produces very high extractions of magnet rare earths (as high as 91.3%)
- High extractions achieved with low acid consumption (as low as 3.8 kg/t)
- Program underway to develop downstream flowsheet to a Mixed Rare Earth Carbonate (MREC) product and generate samples for customer assessment
- New Mineral Resources and maiden Exploration Target for Cowalinya project expected in Q3 2023

Heavy Rare Earths Limited (“HRE” or “the Company”) is pleased to report results from its ongoing metallurgical investigation of rare earth mineralisation at its 100 per cent-owned Cowalinya project in the Norseman-Esperance region of Western Australia.

**HRE Executive Director, Richard Brescianini**, said, “We are making excellent progress on our metallurgical program to establish an optimal process route for the rare earth resources at Cowalinya.

“Our earlier reported sizing work gave us confidence that simple, low-cost screening is capable of delivering a two-fold increase in rare earth concentration for leaching. More recent diagnostic leaching of this upgraded material has yielded a number of highly promising magnet rare earth extractions with low acid consumption, both of which are central to technical and commercial viability. Whilst we acknowledge some variability in these results and the need to further optimise leach performance, our forward program now has its sights firmly set on producing samples of a Mixed Rare Earth Carbonate, the first possible entry point by HRE into the rare earth supply chain.”

Initial sizing test work by Perth-based Strategic Metallurgy in 2022 on saprolite-hosted mineralisation from 13 (4- and 5-metre) composites from across HRE’s Cowalinya resource<sup>1</sup> showed an average of 78.5% of the rare earths are hosted in the fines (<25µm) fraction which comprises 37.2% of the bulk saprolite feed mass. Furthermore, simple recovery of the fines fraction delivers better than a two-fold increase in rare earth grade (*refer to ASX announcement 13 December 2022*).

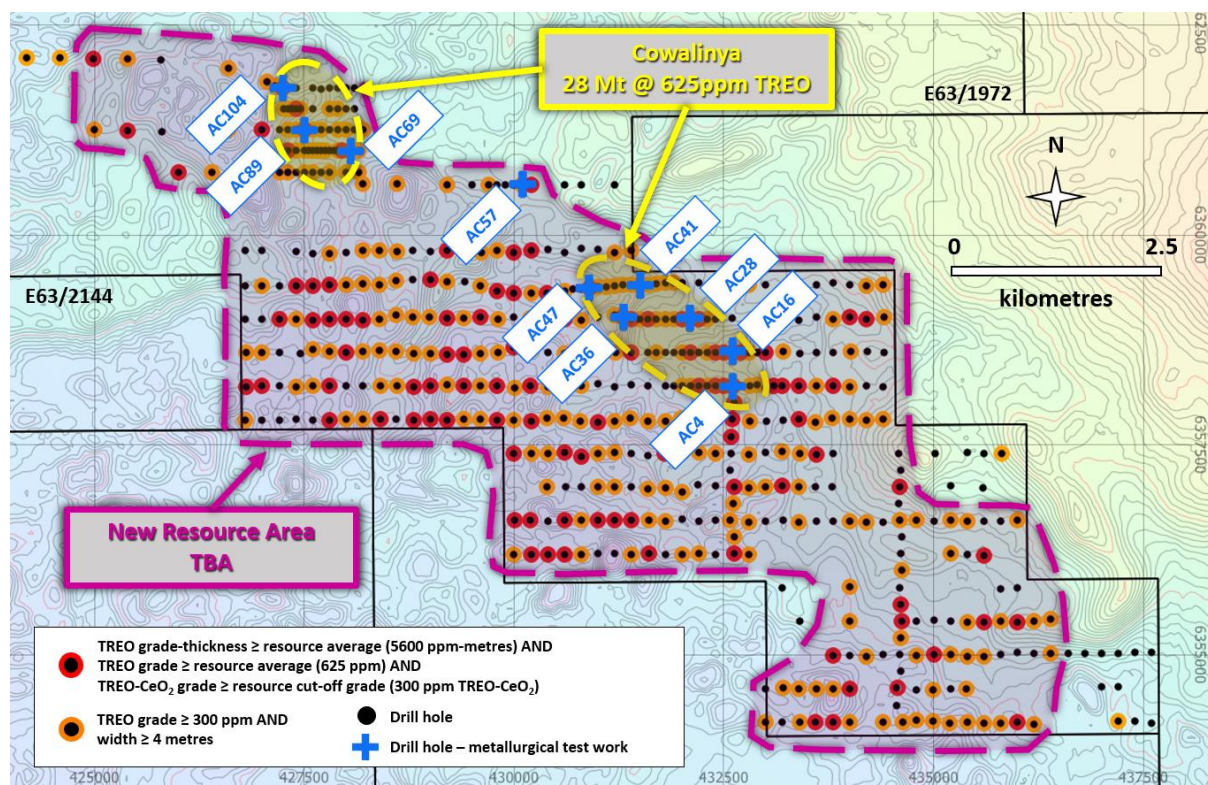
<sup>1</sup> Table 5.1 of Appendix 7 (Cowalinya Resource Report) of the Independent Geologist’s Report contained in HRE’s IPO Prospectus.

These results enable the design of an upstream process flowsheet for the project that removes gangue from saprolite via simple screening and desliming cyclones.

The next phase of test work by Strategic Metallurgy involved subjecting the rare earths-containing fines fraction from the same 13 composites to diagnostic leaching tests to determine the efficiency with which rare earths are brought into solution. The location of the 10 drillholes from which these composites were prepared is shown in Figure 1. Tests were conducted with weak solutions of commercially available hydrochloric acid ("HCl"), sulphuric acid and ammonium sulphate.

In all cases, the tests using HCl delivered superior rare earth solubility and acid consumption results. A summary of the HCl results, along with the corresponding sizing data, is presented in Table 1. **The key outcome is that the majority of composites (8 of 13 composites: SM01-04, SM06-07, SM12-13) show both high leachability (>75%) of the magnet rare earths Pr, Nd, Tb and Dy, and low consumption (<40 kilograms per tonne of fines) of acid, with an average of 82.9% and 18.1 kg/t respectively.**

Considering the rare earths-containing fines fraction accounts for an average of 42.1% of the saprolite feed mass (see Table 1), HCl consumption is expected to average 7.6 kg per tonne of saprolite feed.



**Figure 1: Plan view of Cowalinya air core drilling on southeastern part of E63/1972 highlighting holes where diagnostic leach test work has been completed.**

Background image: Landgate digital elevation model.



**Table 1: Combined summary of sizing and diagnostic leach test work.**

COMPOSITE	HEAD ASSAY (ppm TREO)	FINES (-25µm) ASSAY (ppm TREO)	FINES MASS (% of total mass)	MAGNET RARE EARTHS RECOVERY TO FINES	MAGNET RARE EARTHS EXTRACTION TO LEACH	MAGNET RARE EARTHS TOTAL RECOVERY	HYDROCHLORIC ACID CONSUMPTION (kg/t)
SM01	1045	2050	37.8%	81.1%	86.3%	69.9%	15.2
SM02	750	1270	51.6%	91.7%	84.5%	77.5%	3.8
SM03	1383	3674	27.0%	68.1%	91.3%	62.2%	13.6
SM04	1280	1575	59.9%	91.6%	84.5%	77.4%	12.8
SM05	927	2071	33.3%	84.5%	36.1%	30.5%	67.7
SM06	754	1929	29.4%	79.5%	83.8%	66.6%	37.8
SM07	938	1662	43.6%	87.4%	75.6%	66.1%	15.8
SM08	752	1800	27.8%	74.0%	89.1%	65.9%	150.4
SM09	453	806	35.0%	69.4%	64.9%	64.9%	126.5
SM10	744	1752	29.5%	68.6%	12.3%	8.4%	8.7
SM11	460	1837	20.8%	86.9%	16.0%	13.9%	25.4
SM12	1376	2642	46.6%	86.9%	81.7%	71.0%	20.0
SM13	1326	2140	41.1%	67.5%	75.3%	50.8%	26.0
<b>AVERAGE</b>			<b>42.1%</b>	<b>81.7%</b>	<b>82.9%</b>	<b>67.7%</b>	<b>18.1</b>

TREO = La2O3 + CeO2 + Pr6O11 + Nd2O3 + Sm2O3 + Eu2O3 + Gd2O3 + Tb4O7 + Dy2O3 + Ho2O3 + Er2O3 + Tm2O3 + Yb2O3 + Lu2O3 + Y2O3.

MAGNET RARE EARTHS = Pr + Nd + Tb + Dy.

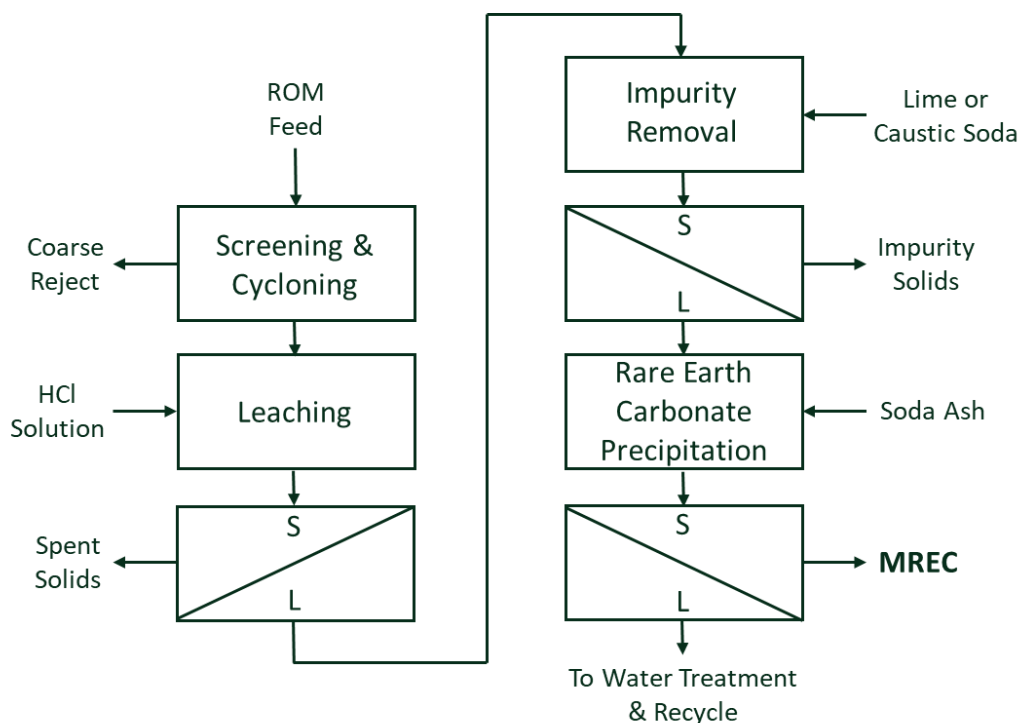
ACID COMSUMPTION expressed in kilograms of hydrochloric acid per tonne of fines (-25µm) fraction.

AVERAGE calculated on composites identified as preferred material types (SM01, SM02, SM03, SM04, SM06, SM07, SM12, SM13).

These diagnostic results justify HRE accelerating its metallurgical test program over the coming months:

1. Optimising the leach conditions focusing on maximising magnet rare earth extractions whilst minimising acid consumption.
2. Extending the diagnostic program by treating an additional 50 (6-metre) composites from across the 35 km<sup>2</sup> area earmarked for resource expansion (see pink shaded area in Figure 1) under optimised leach conditions. These composites have been identified by HRE using geochemical algorithms aimed at discriminating preferred material (i.e., both high rare earth extraction and low HCl consumption, currently represented by samples SM01-04, SM06-07 and SM12-13) from non-preferred material (i.e., either low rare earth extraction or high HCl consumption, currently represented by samples SM05 and SM08-11). This work will provide further insight into the geo-metallurgical variability of mineralisation at Cowalinya and test the robustness of HRE's material type discrimination algorithms.
3. In parallel with the above-described work streams, commencing a bench-scale program to develop a flowsheet to a Mixed Rare Earth Carbonate ("MREC") product (Figure 2) which represents the first entry point by clay-hosted projects into the rare earth supply chain. Subject to the success of this program, the Company plans on making MREC samples available to refiners in Europe, Asia, the United States and Australia to determine marketability.

Strategic Metallurgy expects to complete these programs in Q4 2023, shortly after HRE anticipates reporting new Mineral Resources and a maiden Exploration Target for the Cowalinya project in Q3 2023.



**Figure 2: General flowsheet to treat clay-hosted rare earth mineralisation producing an MREC product.**

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This announcement has been approved by the Board of HRE.

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**About Heavy Rare Earths Limited**

Heavy Rare Earths Limited (ASX: HRE) is an Australian rare earth exploration and development company. HRE's key exploration project is Cowalinya, near Norseman in Western Australia. This is a clay-hosted rare earth project with an Inferred Resource of 28 Mt @ 625 ppm TREO and a desirable rare earth composition where 25% are the valuable magnet rare earths and 23% the strategic heavy rare earths.

**Competent Persons Statement**

The Exploration Results contained in this announcement were compiled by Mr. Richard Brescianini. Mr. Brescianini is a member of the Australian Institute of Geoscientists (AIG). He is a director and full-time employee of Heavy Rare Earths Limited. Mr. Brescianini has more than 35 years' experience in mineral exploration and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration to qualify as a Competent Person as defined in the 2012 JORC Code.

The information in this announcement that relates to metallurgical results is based on information compiled by Heavy Rare Earths Limited and reviewed by Mr. Gavin Beer of Met-Chem Consulting Pty. Ltd. who is a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy (AusIMM). Mr. Beer has sufficient experience that is relevant to the metallurgical test work which was undertaken to qualify as a Competent Person as defined in the 2012 JORC Code. Mr. Beer consents to the inclusion in this announcement of the matters based on this information in the form and context in which it appears.

The Mineral Resources contained in this announcement have been extracted from the Independent Geologist's Report included in the Company's Initial Public Offering (IPO) Prospectus, a copy of which was lodged with the Australian Securities and Investments Commission (ASIC) on 5 July 2022. The Company confirms that it is not aware of any new information or data that materially affects the Mineral Resources as contained in the Company's IPO Prospectus. All material assumptions and technical parameters underpinning the Mineral Resources in the Company's IPO Prospectus continue to apply and have not materially changed.

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**Table 2: Saprolite composites used in metallurgical test work.**

COMPOSITE	HOLE NO.	FROM (m)	TO (m)	INTERVAL (m)	TREO (ppm)	TREO-CeO <sub>2</sub> (ppm)	MAGNET REOs/TREO
SM01	AC4	24	29	5	1045	724	29.2%
SM02	AC16	12	17	5	750	473	24.6%
SM03	AC16	24	29	5	1383	1131	30.2%
SM04	AC28	14	19	5	1280	1158	32.2%
SM05	AC28	32	37	5	927	656	29.3%
SM06	AC36	20	25	5	754	511	25.3%
SM07	AC41	11	16	5	938	816	31.9%
SM08	AC41	22	27	5	752	526	26.2%
SM09	AC47	17	22	5	453	273	21.5%
SM10	AC57	14	18	4	744	373	18.3%
SM11	AC69	13	18	5	460	241	18.9%
SM12	AC89	28	33	5	1376	969	28.7%
SM13	AC104	24	29	5	1326	1003	26.3%

**Table 3: Cowalinya air core holes for which metallurgical results are reported.**

HOLE NO.	NORTHING (m)	EASTING (m)	EVEVATION (m)	DIP (°)	TOTAL DEPTH (m)
AC4	6358200	432600	261.3	-90	36
AC16	6358600	432600	260.9	-90	32
AC28	6359000	432100	265.2	-90	39
AC36	6359020	431300	259.0	-90	31
AC41	6359365	430900	260.0	-90	30
AC47	6359400	431500	261.0	-90	28
AC57	6360600	430100	267.7	-90	21
AC69	6361000	428050	261.4	-90	22
AC89	6361250	427500	261.8	-90	44
AC104	6361755	427245	259.1	-90	39



## 2012 JORC Code – Table 1

### Section 1: Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary
<b>Sampling techniques</b>	Nature and quality of sampling (e.g., cut channels, random chips, or specific specialized 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.	<p>A total of 550 vertical aircore holes have been drilled by HRE on the Cowalinya project to date: 109 holes in 2021 (AC1-AC109) and 441 holes in 2022 (AC110-AC547). Maximum hole depth is 59 metres. All holes have been tested for supergene rare earth element (REE) mineralisation hosted by saprolitic clays. Drilling in 2021 overlapped extensively with areas previously aircore drilled by two companies exploring for gold (AngloGold Ashanti Ltd and Great Southern Gold Pty Ltd).</p> <p>One-metre samples are collected from a cyclone into plastic bags.</p> <p>All holes drilled in 2022 have been 2 metre composite-sampled with 1 metre samples at end of hole. Overlying transported sediments are not routinely sampled as they do not contain anomalous amounts of REEs.</p>
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	For aircore drilling, regular air and manual cleaning of cyclone is being undertaken. Certified standards and duplicate samples are submitted with drill samples.
	Aspects of the determination of mineralisation that are Material to the Public Report.	Aircore drilling is used to obtain 1m samples which are collected in plastic bags. Samples ranging from 1m to 2m composites are taken for analysis. Sample size is 2-3 kilograms in weight. At LabWest Minerals Analysis (LabWest) in Perth, Western Australia, samples are dried, crushed, split and pulverized with a 0.1-gram sub-sample set aside for assay.
<b>Drilling techniques</b>	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.).	The drill type is aircore, a form of reverse circulation (RC) drilling using slim rods and a 3.5-inch blade bit. The samples recovered are typically rock chips and powder, similar to RC drilling.
<b>Drill sample recovery</b>	Method of recording and assessing core and chip sample recoveries and results assessed.	Aircore recovery is visually assessed by comparing drill chip volumes in sample bags for individual metres. Estimates of sample recovery are recorded on drill logs. Routine checks for correct sample depths are undertaken. Aircore sample recoveries are visually checked for recovery, moisture and contamination and are considered to be acceptable within industry standards. The cyclone is routinely cleaned ensuring no material build up.

Criteria	JORC Code Explanation	Commentary
	Measures taken to maximize sample recovery and ensure representative nature of the samples.	Due to the generally good drilling conditions through dry saprolite the site geologist believes the samples are reasonably representative. Poor sample recovery is regularly recorded in the first couple of metres of a hole and often when hard bedrock is intersected – usually less than a full metre is recovered. Wet samples with moderate recoveries are encountered most often in the transported sand/silcrete layer lying immediately above saprolite.
	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.	No sample bias has been identified to date. Future studies will be undertaken.
<b>Logging</b>	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.	Chip/clay samples are geologically logged in enough detail to discern lithological units. Logging is appropriate for this style of drilling and current stage of the project.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	Logging is qualitative in nature.
	The total length and percentage of the relevant intersections logged.	All aircore holes are completely geologically logged.
<b>Sub-sampling techniques and sample preparation</b>	If core, whether cut or sawn and whether quarter, half or all core taken.	Not applicable.
	If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.	One-metre samples are collected from a cyclone into plastic bags. Two-metre composites and single metre samples are collected by spearing each plastic bag with a scoop down the side of the bag and dragging it back up the side of the bag so as not to lose any sample – this achieves a representative sample from top to bottom through the entire bag. The vast majority of samples are dry sampled.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	Sampling technique is appropriate for the sample types and stage of the project.
	Quality control procedures adopted for all sub-sampling stages to maximize representivity of samples.	QAQC procedures involve the use of certified standards every 20 <sup>th</sup> sample.
	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.	A field duplicate is taken every 20 <sup>th</sup> sample.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample size of 2-3 kilograms is considered appropriate to the grain size and style of mineralisation being investigated.



Criteria	JORC Code Explanation	Commentary
<b>Quality of assay data and laboratory tests</b>	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	Analyses of drilling composites and metallurgically-generated solids samples are done at LabWest using their AF-02S technique: lithium meta/tetraborate fusion with ICP-MS/OES finish.  This technique is considered to be a 'total' digest.  A suite of 15 REEs – lanthanum (La), cerium (Ce), praseodymium (Pr), neodymium (Nd), samarium (Sm), europium (Eu), gadolinium (Gd), terbium (Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), ytterbium (Yb), lutetium (Lu), and yttrium (Y) – plus scandium (Sc), thorium (Th) and uranium (U), and (in the case of drilling composites) oxides of aluminium (Al), calcium (Ca), iron (Fe), magnesium (Mg) and phosphorus (P), are measured.  Analyses of metallurgically-generated liquor samples are done at ALS Metallurgy using direct spray and solution dilution with ICP-MS/OES finish.  A suite of 15 REEs plus Sc, Th and U are measured.
	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.	Not applicable.
	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.	OREAS standards and/or blanks are inserted every 20 <sup>th</sup> sample. Field duplicates are taken every 20 <sup>th</sup> sample.  LabWest uses OREAS standards, blanks and sample repeats. Acceptable levels of accuracy have been achieved.
<b>Verification of sampling and assaying</b>	The verification of significant intersections by either independent or alternative company personnel.	Significant intersections have yet to be verified by an independent geological consultant. They have been verified by alternative company geological personnel.
	The use of twinned holes.	No twinned holes have been drilled on the project to date.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	All data have been entered into Excel spreadsheets.
	Discuss any adjustment to assay data.	No data has been adjusted.

Criteria	JORC Code Explanation	Commentary
<b>Location of data points</b>	Accuracy and quality of surveys used to locate drillholes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	Hole collars are surveyed using a hand-held Garmin Etrex 22x GPS with $\pm 3$ metre accuracy. Northings, eastings and elevations are recorded using the hand-held GPS.
	Specification of the grid system used.	GDA94 z51.
	Quality and adequacy of topographic control.	The Cowalinya project is located in relatively flat terrain. Topographic control is provided by Landgate's Digital Elevation Model over the region which has an expected horizontal accuracy of 10 metres and vertical accuracy of 2 metres (both 95% confidence interval).
<b>Data spacing and distribution</b>	Data spacing for reporting of Exploration Results.	Generally, 400 metres x 200 metres.
	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.	Data spacing is considered sufficient for this style of mineralisation to establish Inferred Mineral Resources. The mineralisation occurs as extensive, generally flat lying supergene blankets hosted in saprolitic clays.
	Whether sample compositing has been applied.	All holes have been assayed by 2 metre composite samples, compiled from 1 metre drilled samples. Additionally, a 1 metre end-of-hole sample is submitted for a 63 multi-element assay.  A total of 7,952 samples (including standards, blanks and field duplicates) have been submitted for assay over the course of the project.
<b>Orientation of data in relation to geological structure</b>	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	Sampling is likely to be unbiased as vertical holes are intersecting flat lying mineralisation.
	If the relationship between the drilling orientation and the orientation of key mineralized structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	It is unlikely to be biased.
<b>Sample security</b>	The measures taken to ensure sample security.	Experienced field assistants have undertaken the sampling and delivery of samples to the freight company in Esperance, which provides a direct delivery service to LabWest in Perth.
<b>Audits or reviews</b>	The results of any audits or reviews of sampling techniques and data.	No audits or reviews have been commissioned to date.

## Section 2: Reporting of Exploration Results

Criteria	JORC Code Explanation	Commentary
<b>Mineral tenement and land tenure status</b>	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.	Exploration licence E63/1972 is located 55 kilometres east-north-east of Salmon Gums in Western Australia. It consists of 80 graticular blocks comprising an area of 224 km <sup>2</sup> . It is situated on unallocated crown land. The registered holder of the tenement is Heavy Rare Earths Limited (HRE).  Full native title rights have been granted over the tenement and surrounding lands to the Ngadju people, with whom cultural heritage surveys are undertaken in advance of substantial disturbance exploration works.
	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.	The tenement is in good standing. There are no impediments to operating on the tenement other than requirements of the DMIRS and the Heritage Protection Agreement, all of which are industry standard.
<b>Exploration done by other parties</b>	Acknowledgment and appraisal of exploration by other parties.	AngloGold Ashanti and Great Southern Gold previously worked in the area of E63/1972 exploring for gold mineralisation. Surface geochemical sampling and aircore drilling was undertaken by both companies but no significant gold mineralisation was discovered. Both companies assayed bottom of hole samples for a suite of multi-elements including REEs. Anomalous bedrock REE values were recorded in numerous holes from their drilling. Great Southern Gold also assayed for La and Ce for the entire length of a number of holes. AngloGold Ashanti flew an airborne magnetic/radiometric survey to assist with mapping of buried bedrock lithologies.  Buxton Resources and Toro Energy also previously worked in the area of E63/1972 exploring for gold and nickel mineralisation, and uranium mineralisation, respectively. Both companies flew time-domain electromagnetic surveys to aid in their exploration targeting. No significant mineralisation was discovered.
<b>Geology</b>	Deposit type, geological setting and style of mineralisation.	The deposit type being investigated is low grade saprolite clay-hosted supergene rare earth mineralisation. This style of supergene rare earth mineralisation is developed over bedrock granitic rock types (granites and granitic gneisses) which contain anomalous levels of REEs. Although low grade, low mining and processing costs can make this type of deposit profitable to exploit.



Criteria	JORC Code Explanation	Commentary
<b>Drillhole Information</b>	<p>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:</p> <ul style="list-style-type: none"> <li>- easting and northing of the drillhole collar</li> <li>- elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole collar</li> <li>- dip and azimuth of the hole</li> <li>- down hole length and interception depth</li> <li>- hole length.</li> </ul>	<p>All relevant data for the drilling from which metallurgical samples were sourced is shown in Table 3.</p>
<b>Data aggregation methods</b>	<p>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.</p>	<p>All REE assays have been converted to oxide (REO) values using the following industry standard element-to-stoichiometric oxide conversion factors:</p> <p> <math>\text{La}_2\text{O}_3 = \text{La} \times 1.1728</math>  <math>\text{CeO}_2 = \text{Ce} \times 1.2284</math>  <math>\text{Pr}_6\text{O}_{11} = \text{Pr} \times 1.2082</math>  <math>\text{Nd}_2\text{O}_3 = \text{Nd} \times 1.1664</math>  <math>\text{Sm}_2\text{O}_3 = \text{Sm} \times 1.1596</math>  <math>\text{Eu}_2\text{O}_3 = \text{Eu} \times 1.1579</math>  <math>\text{Gd}_2\text{O}_3 = \text{Gd} \times 1.1526</math>  <math>\text{Tb}_4\text{O}_7 = \text{Tb} \times 1.1762</math>  <math>\text{Dy}_2\text{O}_3 = \text{Dy} \times 1.1477</math>  <math>\text{Ho}_2\text{O}_3 = \text{Ho} \times 1.1455</math>  <math>\text{Er}_2\text{O}_3 = \text{Er} \times 1.1435</math>  <math>\text{Tm}_2\text{O}_3 = \text{Tm} \times 1.1421</math>  <math>\text{Yb}_2\text{O}_3 = \text{Yb} \times 1.1387</math>  <math>\text{Lu}_2\text{O}_3 = \text{Lu} \times 1.1371</math>  <math>\text{Y}_2\text{O}_3 = \text{Y} \times 1.2699</math>. </p> <p>These oxide values are summed to produce a total rare earth oxide (TREO) grade for each assay sample.</p> <p>Minimum grade cut-off used is 300 ppm TREO.</p> <p>Maximum internal dilution is 2 metres @ &lt;300 ppm TREO.</p> <p>No high cut-off has been applied.</p> <p>Length-weighted averages have been applied to intersections.</p>

Criteria	JORC Code Explanation	Commentary
	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.	Intervals reporting >1000 ppm TREO are reported separately.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values have been used.
<b>Relationship between mineralisation widths and intercept lengths</b>	If the geometry of the mineralisation with respect to the drillhole angle is known, its nature should be reported.  If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g., 'down hole length, true width not known').	To date the targeted mineralisation appears to occur in flat lying sheets and drill holes have all been drilled at 90° vertically.  The down hole length of intercept is effectively a true thickness of mineralisation.
<b>Diagrams</b>	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 drillhole collar locations and appropriate sectional views.	Refer to Figure 1 for plan view of all drillhole collar locations, including the locations of drill holes from which composite samples were sourced for metallurgical test work.
<b>Balanced reporting</b>	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.	Summary assays for all mineralised intervals from which composites were prepared for metallurgical test work are presented in Table 2.

Criteria	JORC Code Explanation	Commentary
<b>Other substantive exploration data</b>	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.	<p>U and Th values are reported as they are considered to be deleterious elements in rare earth processing. The highest values recorded for these elements on the project to date are 81 ppm ThO<sub>2</sub> and 96 ppm U<sub>3</sub>O<sub>8</sub>. The length-weighted average values are 11 ppm and 3.5 ppm, respectively.</p> <p>Particle size analysis on 13 mineralised saprolite composites shows that, on average:</p> <ul style="list-style-type: none"> <li>- 78.5% of REEs are confined to the fines (-25µm) fraction</li> <li>- the fines fraction comprises 37.2% of the bulk saprolite feed mass</li> <li>- the REE grade of the fines fraction is 116% higher than the bulk saprolite feed grade.</li> </ul> <p>Diagnostic leach test work in weak hydrochloric acid (HCl) solution (1-2% residual HCl) at 10% solids and 50°C on the fines fraction from 13 mineralised saprolite composites achieves the following results:</p> <ul style="list-style-type: none"> <li>- 82.9% (average) REE extraction into solution</li> <li>- 18.1 kg/t (average) of HCl (32%) consumed</li> </ul> <p>for preferred material types.</p>
<b>Further work</b>	The nature and scale of planned further work (e.g., tests for lateral extensions or depth extensions or large-scale step-out drilling).	Mineral resources are in the process of being re-estimated for the Cowalinya project, incorporating assays from a 441-hole drilling program that was undertaken in 2022. Comprehensive metallurgical test work is also in progress and petrological studies will be completed to identify REE-bearing mineral species.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Area earmarked for potential extensions to the Cowalinya mineral resource is indicated in Figure 1.