

Research confirms high-value REE minerals Monazite & Xenotime at Radium Hill

Highlights

- Collaboration with the Australian Research Council further demonstrated critical minerals potential of the Curnamona Province
- Preliminary research has shown presence of previously unrecognized minerals of Monazite and Xenotime within Radium Hill-style mineralisation
- Monazite and Xenotime are highly sought-after minerals given they are hosts to high-value Rare Earths Elements

Heavy Rare Earths Limited (“HRE” or “the Company”) is pleased to announce mineralogical results from samples of Radium Hill-style mineralisation collected along the Bonython Critical Mineral Corridor (“BCMC”).

The BCMC is an 8km north-east-trending structural zone, extending from historic Radium Hill Mine, Australia’s first uranium mine, to Bonython Hill (Figure 2). Small-scale pits and shafts are scattered along the BCMC at prospects and drilling targets including Railways, Bristowe’s, Radium Hill North and Bonython Hill. Surface rock samples at the BCMC have shown positive assays for a variety of critical minerals including Yttrium (‘Y’), Scandium (‘Sc’), Rare Earth Elements¹ (‘REEs’) and Vanadium (‘V’) (*refer ASX announcement 12 Dec 2025*).

HRE is collaborating with researchers at Adelaide University as part of the Australian Research Council (ARC), Centre for Critical Resources for the Future (CCRF), studying the mineralogical origin and setting of REEs, Sc, Y and U at Radium Hill. This is part of CCRF’s larger project researching the critical minerals potential of the Curnamona Province, South Australia.

Two samples have been analysed to date, one taken from ore piles at the historical Radium Hill Mine (25RH13) at the southern end of the BCMC, and one (25RH08) from Taylor’s shaft, a pre-WWII uranium mine at the northern end of the BCMC, 3.7kms from the exclusion zone (Figure 2). Samples were examined at Adelaide University using a Scanning Electron Microscope (SEM). Additional samples have been collected along the zone between Radium Hill Mine and Taylors shaft and are being processed.

Preliminary findings from this limited testing have shown the presence of high-value accessory minerals such as **Monazite** and **Xenotime** associated with the well-documented davidite-rutile-ilmenite mineralisation. Monazite and Xenotime are highly valued as a source of critical minerals with a proven flowsheet for commercial production, and testing of individual monazite and xenotime grains has so far confirmed the presence of REEs and Yttrium (Figure 1).

¹ REE (Rare Earth Elements) = La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu.

Chair of the Board, Gabriel Chiappini commented:

We are encouraged with the results of research and studies performed thus far at Adelaide University as part of the Australian Research Council (ARC) Centre for Critical Resources for the Future (CCRF). It has been a pleasure to collaborate with such respected scholars and researchers. Our collaboration has uncovered key indicators of the existence of sought-after Heavy Rare Earths elements and Yttrium, with the presence of Monazite and Xenotime in mineral systems congruent with that of the Radium Hill Mine. These studies continue to add to the strategy of unlocking the multi-commodity critical minerals at our Radium Hill Project. There has been limited research into Radium Hill-style mineralisation for over 60 years, with previous historical work focussed almost exclusively on Uranium. We continue to progress our exploration programs at Radium Hill and look forward to applying the knowledge from the research and study results at ARC with a near-term drilling program targeting critical mineral resource discoveries along Critical Mineral Corridor at HRE's Radium Hill Project"

Recognition of these minerals is significant as they have not previously been linked with Radium Hill-style mineralisation. Although the presence of REEs, Sc and Y at Radium Hill has been known since the earliest phases of mining (1908 – 1961), the assumption has always been that they are mineralogically associated with the chief uranium mineral, Davidite. The genetic association of Monazite and Xenotime with Davidite is still unknown at this early stage of research and is the subject of ongoing work by the CCRF.

HRE notes that the CCRF findings are from early-stage research and their relevance to a commercial critical mineral discovery may alter as work continues.

This latest research has highlighted the importance of updated geological research using modern analysis techniques such as Electron Probe Microanalysis (EPMA) and Energy Dispersive X-ray Spectroscopy (EDS).

There has been no research into Radium Hill-style mineralisation for over 60 years. Previous historical work focussed almost exclusively on Uranium hosted by Dravite in shear zones within the main Radium Hill Mine and did not attempt to understand the distribution of REE-Sc-Y, either associated with Uranium orebodies, or in any other rock types along the BCMC.

Ongoing research by the CCRF at Adelaide University is vital to understanding the relationship of REEs, Sc and Y, with the known Uranium mineralisation and determining if there is potential for these critical minerals to be found in geological settings apart from the Davidite-rich structures.

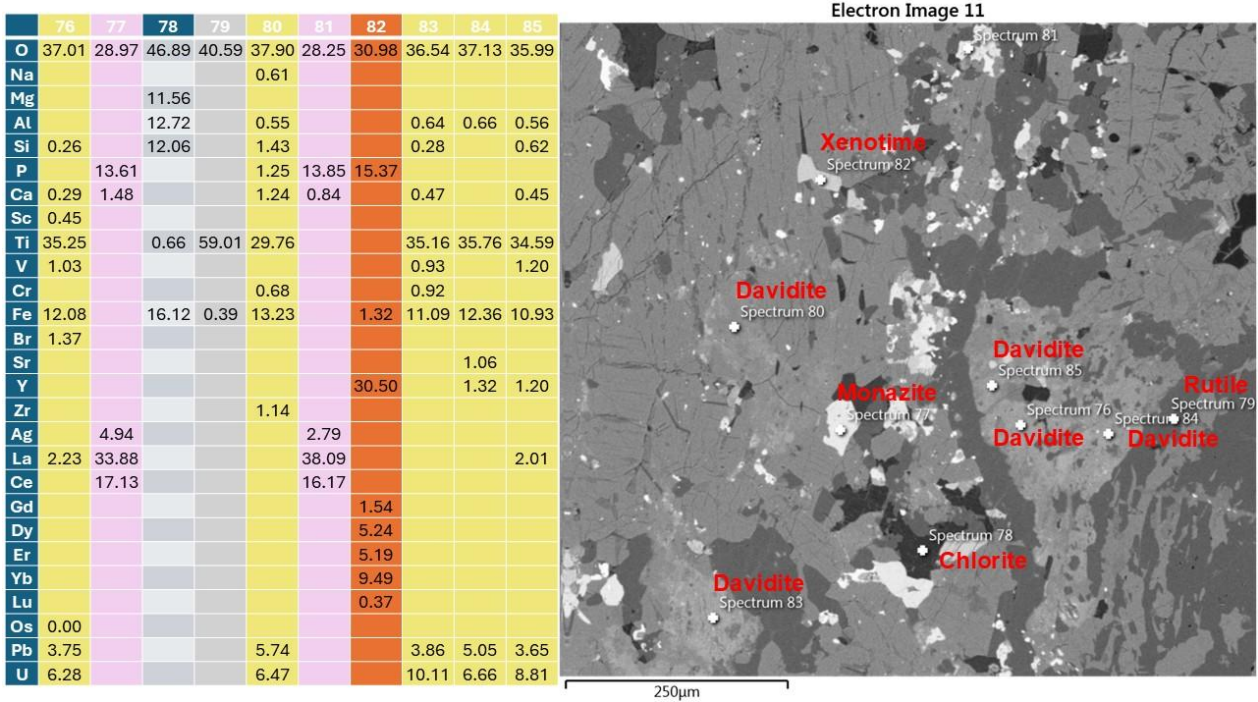


Figure 1: SEM image of sample 25RH08 from the BCMC showing typical Radium Hill iron-titanium ore minerals (Davidite, rutile) intergrown with Monazite and Xenotime. Microprobe analysis of individual grains (%) shows light rare earths (LREEs) such as La and Ce are concentrated in Monazite (77, 81), heavy rare earths (HREEs) are preferentially in Xenotime (82) and Uranium is in Davidite (76, 80, 83, 84, 85).

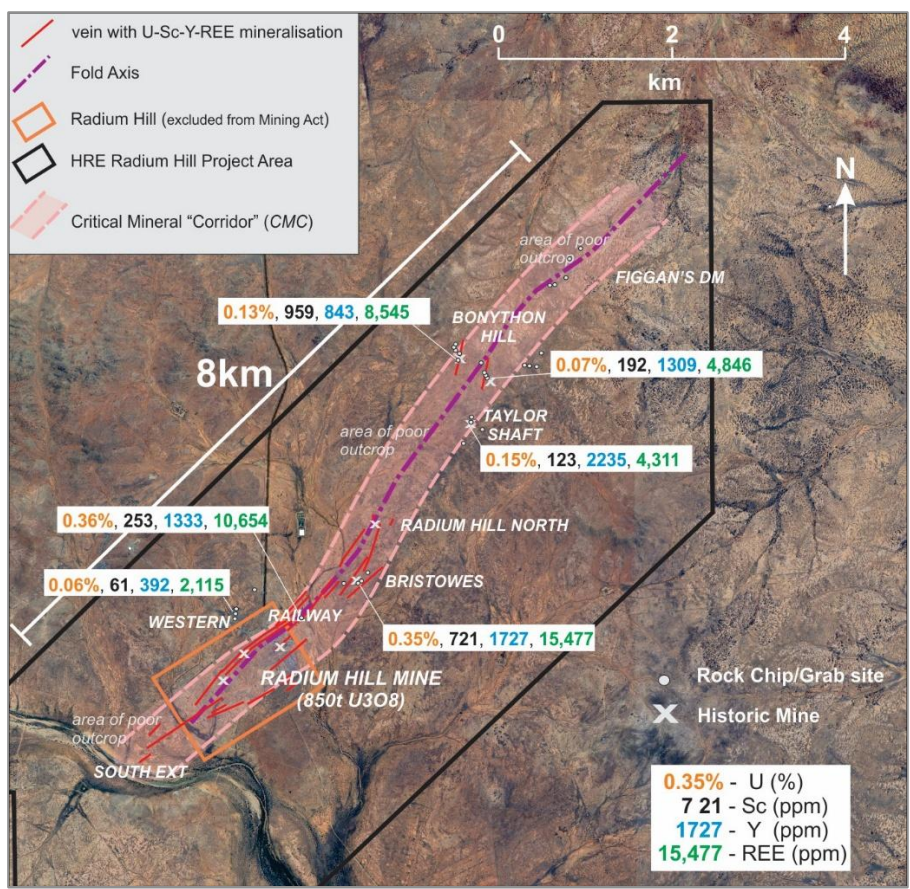


Figure 2: Radium Hill project showing Bonython Critical Mineral Corridor (BCMC) with selected high-grade rock samples from HRE mapping program (refer ASX announcement 12 December 2025 for further details)

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 uranium and critical minerals exploration and development company. HRE's key exploration projects are in the uranium-and critical minerals-rich Curnamona Province of eastern South Australia and in the Mid-West region of Western Australia.

Competent Person's Statement

The Exploration Results contained in this announcement were compiled by Mr Joseph Ogierman. Mr Ogierman is a Member (#4469) of the Australian Institute of Geoscientists (MAIG). He is a full-time employee of Heavy Rare Earths Limited. Mr Ogierman 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. Mr Ogierman consents to the inclusion in this announcement of the matters based on the Exploration Results in the form and context in which they appear.

Forward Looking Statement

This announcement includes "forward-looking statements" as that term within the meaning of securities laws of applicable jurisdictions. Forward-looking statements involve known and unknown risks, uncertainties and other factors that are in some cases beyond HRE's control. These forward-looking statements include, but are not limited to, all statements other than statements of historical facts contained in this presentation, including, without limitation, those regarding HRE's future expectations. Readers can identify forward-looking statements by terminology such as "aim," "anticipate," "assume," "believe," "continue," "could," "estimate," "expect," "forecast," "intend," "may," "plan," "potential," "predict," "project," "risk," "should," "will" or "would" and other similar expressions. Risks, uncertainties and other factors may cause HRE's actual results, performance, production or achievements to differ materially from those expressed or implied by the forward-looking statements (and from past results, performance or achievements). Readers are cautioned not to place undue reliance on forward-looking statements. Although HRE believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements.

JORC Code, 2012 Edition – Table 1
Section 1 Sampling Techniques and Data
 (Criteria in this Section apply to all succeeding Sections)

Criteria	JORC Code Explanation	Commentary
Sampling techniques	<p><i>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.</i></p> <p><i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i></p> <p><i>Aspects of the determination of mineralisation that are Material to the Public Report.</i></p>	<ul style="list-style-type: none"> Mineralogical samples have been collected to gain information on characterisation and paragenesis of Radium Hill-style mineralization identified in outcrop, hence they may represent high-grade samples, and are not considered an unbiased sample. No samples were collected during this program for geochemical assay. Two mineralogical samples were collected from the northern and southern extremities of the known 8km mineralised zone. One sample (25RH08) was collected from mine dumps adjacent to Taylors Shaft Mine located within EL 6594. The other sample (25RH11) was collected from waste ore piles within the old Radium Hill Mine site a 2.64 km² area reserved from the South Australian Mining Act 1971. This reserved area is enclosed within EL 6041 but excluded from the exploration licence. Equipment used was predominately handheld hammer for the collection of rock fragments.
Drilling techniques	<p><i>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.).</i></p>	<ul style="list-style-type: none"> No drilling was undertaken on the project.
Drill sample recovery	<p><i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></p> <p><i>Measures taken to maximize sample recovery and ensure the representative nature of the samples.</i></p> <p><i>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.</i></p>	<ul style="list-style-type: none"> No drilling was undertaken on the project.

Criteria	JORC Code Explanation	Commentary
Logging	<p><i>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.</i></p> <p><i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</i></p> <p><i>The total length and percentage of the relevant intersections logged.</i></p>	<ul style="list-style-type: none"> No drilling was undertaken on the project.
Sub-sampling techniques and sample preparation	<p><i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></p> <p><i>If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.</i></p> <p><i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></p> <p><i>Quality control procedures adopted for all sub-sampling stages to maximize representivity of samples.</i></p> <p><i>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.</i></p> <p><i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></p>	<ul style="list-style-type: none"> No drilling was undertaken on the project. All rock grab samples were approximately 200 - 500 g in weight. Ore samples were set in 1 inch diameter epoxy resin puck and then polished down to expose the sample interior for subsequent analysis. No subsampling is described in rock grab samples. No field of duplicate sampling was undertaken. Sample sizes were appropriate for the material sampled.
Quality of assay data and laboratory tests	<p><i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></p> <p><i>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.</i></p> <p><i>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.</i></p>	<ul style="list-style-type: none"> No assays were undertaken for geochemical analyses of whole rock samples. SEM (scanning electron microprobe) analyses of microscopic individual grains (<1mm) were undertaken in order to gain mineragraphic information are not designed as representative grade of mineralisation The samples were analysed using a Quanta 450 scanning electron microscope (SEM) at Adelaide Microscopy, Adelaide University, South Australia. The SEM was equipped with backscattered electron detector for sample imaging and energy dispersive spectrometer for semi-quantitative mineral analysis. Various mineral species could be identified with confidence using these techniques.

Criteria	JORC Code Explanation	Commentary
Verification of sampling and assaying	<p><i>The verification of significant intersections by either independent or alternative company personnel.</i></p> <p><i>The use of twinned holes.</i></p> <p><i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></p> <p><i>Discuss any adjustment to assay data.</i></p>	<ul style="list-style-type: none"> • Verification of significant mineragraphic data results by Adelaide University supervisors, researchers and company geologist • This report does not include drilling or drilling results. • Field data were collected electronically and entered into an Excel spreadsheet, which was then loaded into the company database.
Location of data points	<p><i>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.</i></p> <p><i>Specification of the grid system used.</i></p> <p><i>Quality and adequacy of topographic control.</i></p>	<ul style="list-style-type: none"> • This report does not include drilling or drilling results. • Grab sample locations were recorded using a hand-held Garmin Etrex 22x GPS with ±3 metre accuracy. The grid system used is GDA94 Zone 54. • Not applicable at this stage of exploration
Data spacing and distribution	<p><i>Data spacing for reporting of Exploration Results.</i></p> <p><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></p> <p><i>Whether sample compositing has been applied.</i></p>	<ul style="list-style-type: none"> • Data spacing is appropriate for the style of geological reconnaissance and mineral characterisation.
Orientation of data in relation to geological structure	<p><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></p> <p><i>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.</i></p>	<ul style="list-style-type: none"> • Orientation is not considered in this reconnaissance style of rock sampling, where samples were collected from historical ore dumps and mine pits.
Sample security	<p><i>The measures taken to ensure sample security.</i></p>	<ul style="list-style-type: none"> • Samples were hand-delivered to microscopy laboratories in Adelaide University by researchers with Centre for Critical Resources for the Future (CCRF).
Audits or reviews	<p><i>The results of any audits or reviews of sampling techniques and data.</i></p>	<ul style="list-style-type: none"> • No audits or review of the sampling techniques and results from the exploration program have been performed.

Section 2 Reporting of Exploration Results

(Criteria listed in the preceding Section 1 also apply to this Section)

Criteria	JORC Code Explanation	Commentary
<p>Mineral tenement and land tenure status</p>	<p><i>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.</i></p> <p><i>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.</i></p>	<ul style="list-style-type: none"> • The Radium Hill Project covers 57 km², within which there is a 2.64 km² area covering the historic Radium Hill Mine and Tailings Dam, which is reserved from the South Australian <i>Mining Act 1971</i>. • Heavy Rare Earths Limited (HRE) has entered into a binding agreement with Havilah Resources Limited (Havilah) to acquire an initial 80% interest in the uranium rights on all or part of 22 tenements in South Australia, including parts of 4 tenements at Radium Hill (ELs 5831, 5848, 6041 and 6594). Thereafter HRE and Havilah will co-fund exploration and development activities under a joint venture arrangement. • The agreement excludes access to the 2.64 km² area over the historic Radium Hill Mine (Radium Hill Mine Exclusion Zone). This area is administered by the South Australian Government. • Havilah will remain the title holder of each tenement and HRE as operator will work with Havilah on all tenement governance matters including annual technical reporting, tenement administration and heritage access agreements. • A program for environment protection and rehabilitation (PEPR) approval from the South Australian Department for Energy and Mining (DEM) will be required to undertake ground disturbing works. • Havilah has Native Title Mining Agreements (NTMA) in place with all the relevant Native Title parties covered by the tenements and these NTMAs are registered with DEM.
<p>Exploration done by other parties</p>	<p><i>Acknowledgment and appraisal of exploration by other parties.</i></p>	<ul style="list-style-type: none"> • Exploration at Radium Hill was undertaken solely by the South Australia Department of Mines in the years up to 1962. Exploration in the specific project area by private companies has only reviewed government data.

Criteria	JORC Code Explanation	Commentary
Geology	<i>Deposit type, geological setting and style of mineralisation.</i>	<ul style="list-style-type: none"> The Radium Hill area comprises a sequence of gneisses of late Palaeoproterozoic age (Willyama Supergroup), which was intensely deformed and metamorphosed by the Olarian Orogeny (ca. 1640–1580 Ma) and intruded by granitoid intrusives of early Mesoproterozoic age (ca. 1590–1580 Ma). Uranium mineralisation occurs in NE-trending fractures and shears that cross-cut the regional banding in a domal NE-plunging anticlinal structure. Mineralisation occurs in fracture or shear planes in the gneisses and schists with associated acid and basic dykes. Within a typical lode channel, uranium is mostly concentrated centrally along the strike of the lode shears, within the larger lens-like swellings of the lodes. <p>Sequence of mineralisation is as follows:</p> <ul style="list-style-type: none"> i) Replacement of sericitic shear rock along overthrust fault zones by quartz-biotite-hematite-ilmenite mineralisation; ii) Intrusion of rare earth pegmatites (salmon pink and glassy white feldspar) containing orthite and xenotime; iii) Movement along the shears causing brecciation of the earlier bodies and their biotite alteration; iv) Intrusion of 'new amphibolites' along faults at about this stage; and v) Introduction of clear quartz stringers containing davidite together with irregular replacements by bright red feldspar.
Drillhole Information	<p><i>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes:</i></p> <ul style="list-style-type: none"> - <i>easting and northing of the drillhole collar</i> - <i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole collar</i> - <i>dip and azimuth of the hole</i> - <i>down hole length and interception depth</i> - <i>hole length.</i> 	<ul style="list-style-type: none"> ca. 670 diamond core drillholes drilled in the Radium Hill area of which ca. 190 drillholes were drilled within the project area outside the Radium Hill Mine Exclusion Zone.

Criteria	JORC Code Explanation	Commentary
<p>Data aggregation methods</p>	<p><i>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.</i></p> <p><i>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.</i></p> <p><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></p>	<ul style="list-style-type: none"> • This report does not include drilling or drilling results. Sample results are from individual samples, not subject to cutting of grades or compositing. • No metal equivalent values are reported. • For this announcement REEs (Rare Earth Elements) are regarded as the 15 elements of the Lanthanide series (elements 57-71): La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu. Although Y and Sc are often grouped with the lanthanides for reporting purposes they are being kept separate.
<p>Relationship between mineralisation widths and intercept lengths</p>	<p><i>If the geometry of mineralisation with respect to the drillhole angle is known, its nature should be reported.</i></p> <p><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></p>	<ul style="list-style-type: none"> • Mineralisation at Radium Hill is subvertical to steeply SE dipping. Reported intercepts in costeans are believed to represent the true thickness of mineralisation but drillhole intercepts are believed to be greater than true thickness (true width is not known but may be ca. 50-75% of intercepts).
<p>Diagrams</p>	<p><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 drillhole collar locations and appropriate sectional views.</i></p>	<ul style="list-style-type: none"> • No new discoveries are being reported here. • Maps and tables are shown in the body of the report.
<p>Balanced reporting</p>	<p><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></p>	<ul style="list-style-type: none"> • Due to the large number of historic exploration drillholes in the project area, it is impractical to present a comprehensive report of such. Historic exploration data was often classified and there is often very little information except for uranium intercepts mentioned in brief summary texts or on maps and sparse sections.

<p>Other substantive exploration data</p>	<p><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></p>	<ul style="list-style-type: none"> • The majority of exploration within the project area has been costeaning and drilling but also includes multiple government and company geophysical surveys including airborne electromagnetics, magnetics, radiometrics, and ground gravity, to map out geological basement structure. Most of these surveys were completed prior to 1962. • Metallurgical work was undertaken at Radium Hill prior to and during mining from 1954-61. This is not considered material at this stage of investigation. • HRE commissioned MagSpec Airborne Surveys to fly an airborne magnetic-radiometric survey over most of the project area. NW-SE flight lines were spaced 25 m apart and tie lines 250 m apart. A mean terrain clearance of 30 m was maintained throughout the survey. Survey equipment was as follows: <p>Aircraft Type</p> <ul style="list-style-type: none"> • Cessna 210 <p>Acquisition System</p> <ul style="list-style-type: none"> • Sample rates up to 20 Hz • Integrated Novatel OEM DGPS receiver providing positional information to tag incoming data streams and pilot navigation guidance • Visual, real-time, on-screen system monitoring / error messaging to limit refights due to equipment failure <p>Magnetometer</p> <p>Geometrics G-823A tail sensor mounted in a stinger housing</p> <ul style="list-style-type: none"> • Sensor Type - Cesium vapor • Resolution - 0.001 nT • Sensitivity - 0.01 nT • Sample Rate - 20 Hz (~3.5 m sample interval) • Compensation - 3-axis fluxgate magnetometer <p>Gamma-Ray Spectrometer</p> <p>RSI RS-500 gamma-ray spectrometer, incorporating 2x RSX-4 detector packs</p> <ul style="list-style-type: none"> • Total Crystal Volume - 32 L • Channels - 1024 • Sample Rate - 2 Hz (~35 m sample interval)
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Criteria	JORC Code Explanation	Commentary
		<ul style="list-style-type: none"> • Stabilisation - Multi-peak, automatic gain <p>Altimeters</p> <p>Bendix/King KRA 405 radar altimeter</p> <ul style="list-style-type: none"> • Resolution - 0.3 m • Sample Rate - 20 Hz • Range - 0-760 m <p>Reinshaw ILM-500R laser altimeter</p> <ul style="list-style-type: none"> • Resolution - 0.01 m • Sample Rate – up to 20 Hz • Range - 0-500 m <p>Magnetic Base Stations</p> <p>GEM GSM-19 Overhauser</p> <ul style="list-style-type: none"> • Resolution - 0.01 nT • Accuracy - 0.1 nT • Sample Rate - 1.0 Hz <p>Navigation and Flight Path Recovery</p> <p>NovAtel OEM719 DGPS Receiver</p> <ul style="list-style-type: none"> • Channels - 555 • Signal Tracking - L1/L2 + GLONASS Multi Frequency • Positional Accuracy - 0.4 m RMS (NovAtel CORRECT) • Sample Rate - 2 Hz
<p>Further work</p>	<p><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></p> <p><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></p>	<ul style="list-style-type: none"> • Continued analysis of petrological samples at the Adelaide University Microscopy Centre to determine mineral petrogenesis. • Compilation of available historical geological and geochemical data, magnetic and radiometric interpretations, geological mapping and more comprehensive rock chip sampling is nearing completion leading to development of a geological model for Radium Hill-type U-Sc-REE mineralisation. • On-ground exploration consisting of geological mapping in conjunction with scintillometer and hand-held XRF sample analysis is planned. • Target generation for drill testing based on the new geological model.