



**EMETALS**  
— LIMITED —

4 February 2021

The Manager  
Market Announcements Office  
Level 40, Central Park,  
152-158 St George's Terrace  
PERTH WA 6000

## ACQUISITION OF COWALINYA IONIC RARE EARTH PROJECT

The Directors of eMetals Limited (ACN 142 411 390) (ASX:**EMT**) (**eMetals** or the **Company**) are pleased to announce the acquisition of three new mineral exploration projects including the highly prospective Cowalinya Ionic Rare Earth Project (**Cowalinya Project**) located 100 kilometres south east of Norseman, Western Australia.

### HIGHLIGHTS

- Historical auger drilling within the Cowalinya Project area has defined laterite with up to **1,114ppm TREO + Y**.
- Historical Anglo Gold AC end of hole sampling show results of up to **1,174ppm REE (~0.13% TREO+Y)**.
- The Vendor has lodged a Programme of Works over the Cowalinya Project to undertake regional aircore traversing and EMT will undertake this drilling once the acquisition is complete and all approvals are in place.
- Alkaline gabbro with up to **0.13% TREO+Y** at the Dodgey-Torquata Project

eMetals Director Mathew Walker commented:

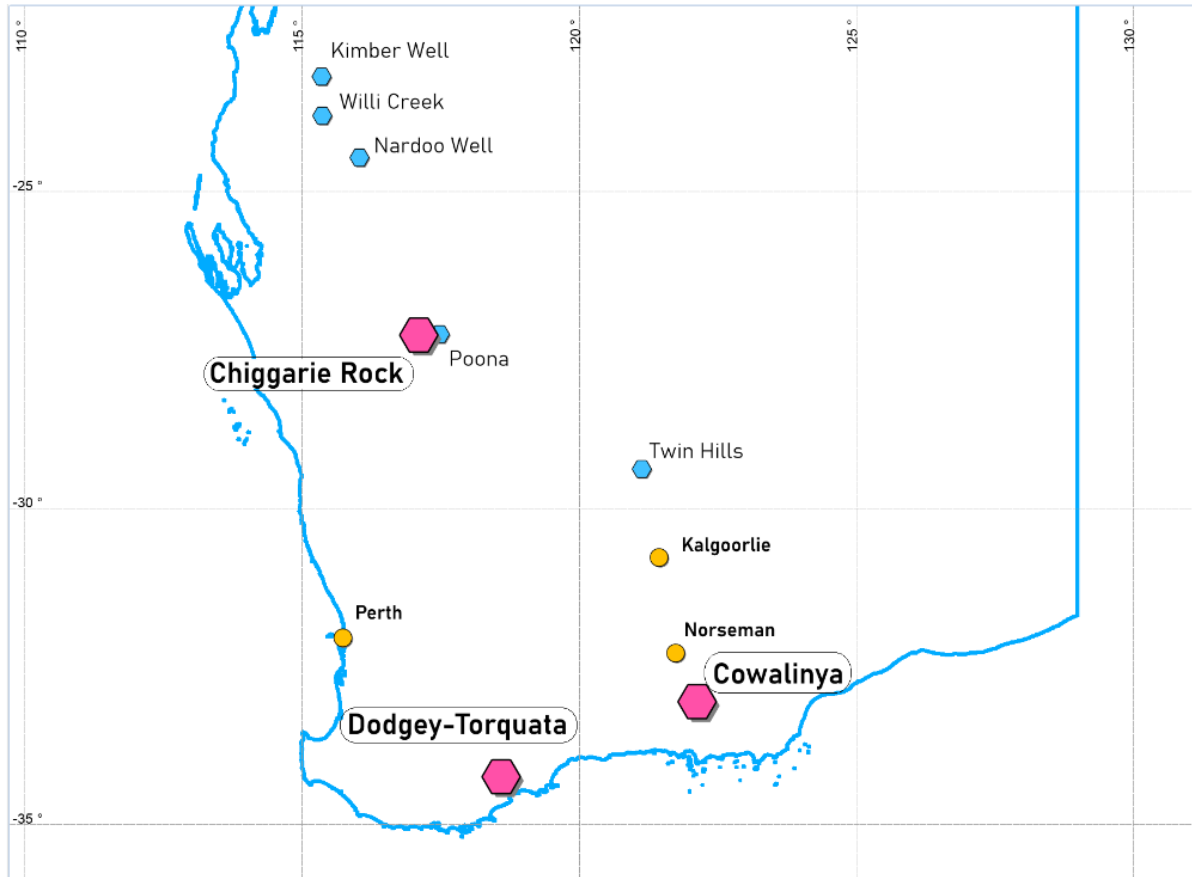
"The acquisition of these three new projects is consistent with the Company's focus on rare and strategic minerals that are critical to the emerging technology industries. In particular, the highly prospective Cowalinya Ionic Rare Earth Project represents a near term exploration target in an area the Company believes has the potential to host a significant regolith hosted REE deposit similar to the Lynas Rare Earths (ASX:LYC) Mount Weld Deposit and Iconic Rare Earths (ASX:IXR) Makuutu Deposit."

### COWALINYA PROJECT

The Cowalinya Project (E62/2049 and E63/2066) is located in the Yilgarn Craton, within the foreland of the Albany Fraser Orogen. The geology of the project is comprised of deeply weathered Archaean and Proterozoic gneisses.



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**Figure 1 Location of SOC Resources Projects**

The Cowalinya Project is prospective for Ionic Adsorption Clay (IAC) Type REE deposits. The Project demonstrates the key features associated with ionic clay deposits; deep and intense weathering, and REE-enriched bedrock.

#### **HISTORICAL EXPLORATION**

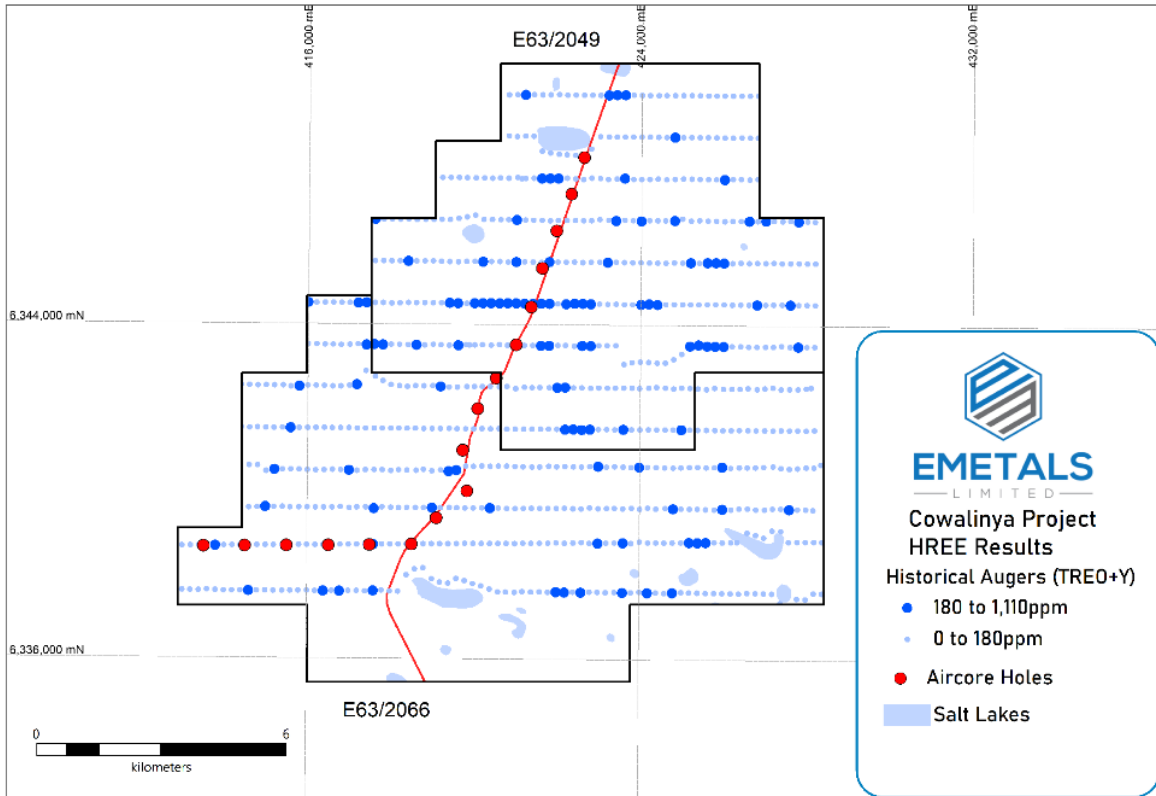
The Cowalinya Project has been explored historically for gold, with 770 auger drill holes and 17 air core holes for 635m drilled on the tenements. Full details of these sample datasets within the tenure are presented in JORC Tables 1 and 2, and within the Appendices therein.

Auger samples were taken to analyse pedogenic calcrete for gold. Auger samples were assayed for 52 elements, including REE's, and Au using Aqua Regia B/ETA digest with a mass spectrometry or optical emissions spectrometry finish. Auger drilling in the Project area has defined laterite with up to 1,114ppm TREO + Y (NOR00702, 413798E 6338675N) with a substantial proportion of auger results in excess of 180ppm TREO+Y. Please refer to Figure 2, below.

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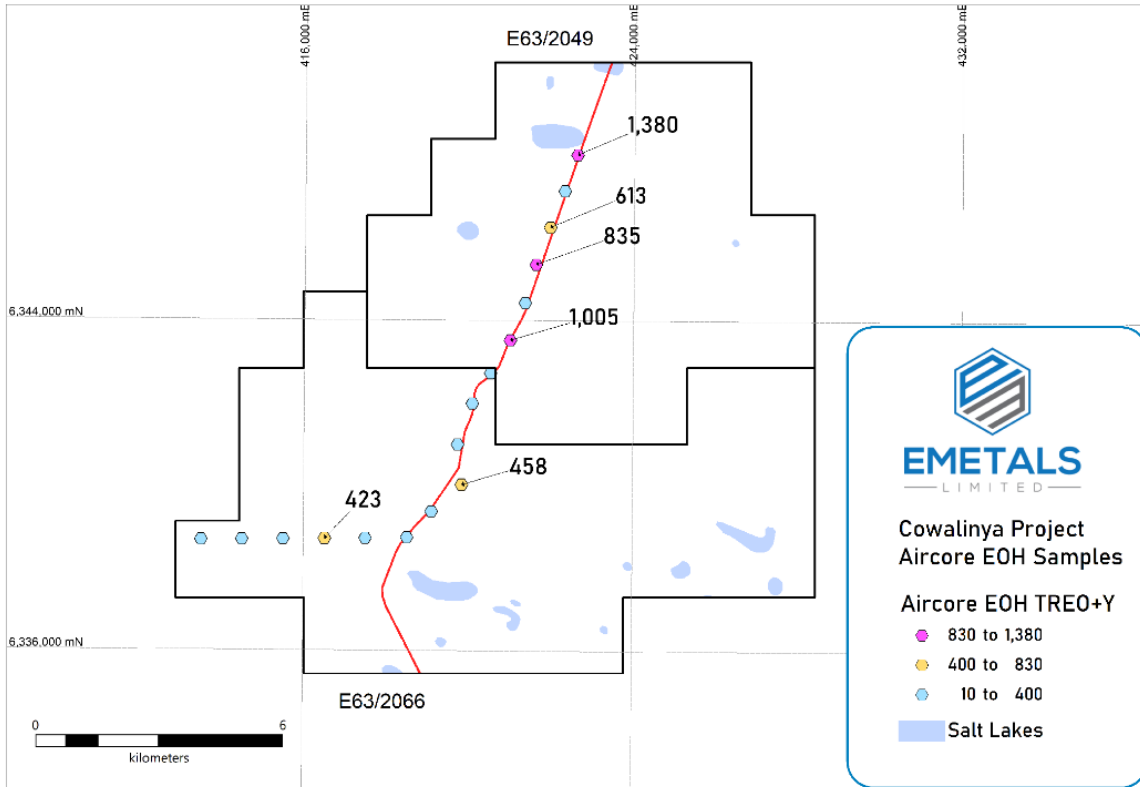
**Figure 2 Auger REE results (as TREO+Y), Cowalinya Project**

Air core drilling was undertaken to geochemically survey the region for Au enrichments and to characterise bedrock lithology. Drill holes were sampled from surface to end of hole via four metre composites for Au, with the end of hole sample sent for a full characterisation suite of 52 elements, including REE's, using Aqua Regia B/ETA.

A total of seventeen aircore holes were drilled within the Cowalinya Project tenure, along the few established roads. These holes were not comprehensively sampled for REE's, with only one end of hole sample submitted for full characterisation. Within the project, six EOH samples returned results of >400ppm TREO with the maximum result of 1,380pp (0.13%) TREO. This forms a cluster of enriched REE's within the basement and remains open in all directions.



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**Figure 3 End of hole aircore REE results (as TREO+Y), Cowalinya Project**

EMT considers that the auger drilling has identified an anomalous concentration of rare earth elements within the surface. The aircore drilling end of hole samples have demonstrated that there are anomalous concentrations of REE within the fresh bedrock of the Project.

The Company has identified that the auger and aircore datasets do not adequately test the full regolith profile for ionic clay type REE mineralisation. The full regolith profile must be assayed to determine if REE's have accumulated in the saprolite clays. Exploration of the full regolith profile for REE is planned to test for development of IAC type mineralisation.

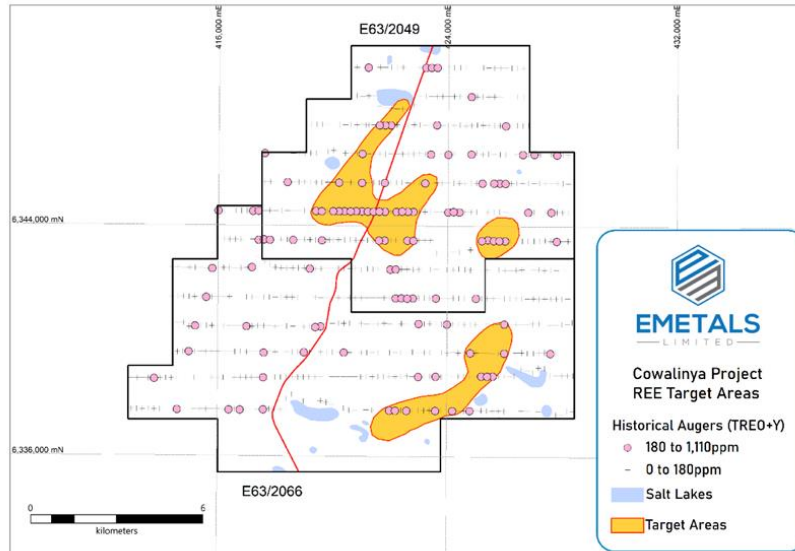
### EXPLORATION PLAN

EMT has developed three target areas within the Cowalinya Project that show enriched REE within auger drilling that require testing at depth; refer to Figure 4. The Company is planning an aircore drilling program to sample the anomalous areas. These anomalies will be drilled at an approximate 800m x 100m pattern to identify areas with enriched saprolite REE contents.



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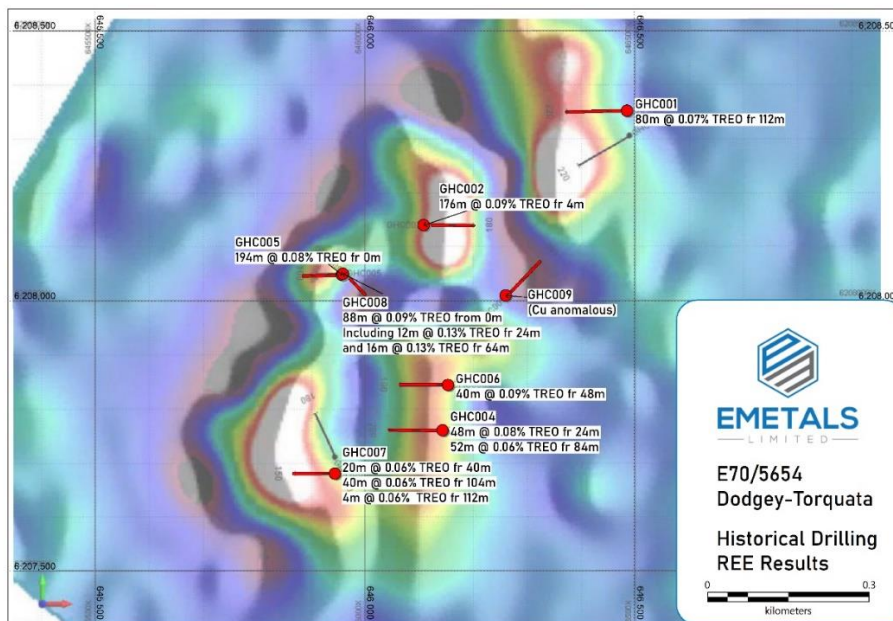


**Figure 4 Ionic Clay REE target zones, Cowalinya Project**

A Programme of Works has been lodged over the Cowalinya Project by the Vendor. EMT will undertake this drilling once all approvals are in place.

**DODGEY-TORQUATA PROJECT**

The Dodgey-Torquata (D-T) Project is a 25.5km<sup>2</sup>, 9 sub-block tenement (E70/5654) located near Jerramungup, south west WA. The Project prospective for rare earth elements and base metals. The D-T prospect a circular magnetic 'bullseye' anomaly approximately 2km x 1.2km in size (Figure 5).



**Figure 5 Dodgey-Torquata Project REE Results, E70/5654**



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D-T was previously explored via a ground magnetics survey that resolved a series of 'dipping plate' magnetic bodies. These modelled bodies were targeted by 8 reverse circulation drill holes for 1,236m. Please refer to JORC Table 1 and 2, and the Appendices therein, for full details of historical drilling.

Drilling encountered a series of gabbro intrusions. The drill holes were assayed for major and multi-elements plus rare earth elements on a 4m composite basis. The rare earth element intersections above a 500ppm TREO+Y cut-off with a maximum 4m internal dilution, are presented below:

<b>GHC001</b>	<b>80m @ 0.07% (701ppm) TREO+Y from 112m to end of hole</b>
<b>GHC002</b>	<b>176m @ 0.09% (934ppm) TREO+Y from 4m to end of hole</b> Including 120m from 4m containing 213ppm Nd <sub>2</sub> O <sub>3</sub> , 54ppm Pr <sub>2</sub> O <sub>3</sub>
<b>GHC004</b>	<b>48m @ 0.08% (871ppm) TREO+Y from 24m</b> <b>52m @ 0.06% (667ppm) TREO+Y from 80m</b>
<b>GHC005</b>	<b>104m @ 0.08% (822ppm) TREO+Y from 0m to EOH</b>
<b>GHC006</b>	<b>40m @ 0.09% (888ppm) TREO+Y from 48m to EOH</b> Including 171ppm Nd <sub>2</sub> O <sub>3</sub> and 44ppm Pr <sub>2</sub> O <sub>3</sub>
<b>GHC007</b>	<b>20m @ 0.06% (631ppm) TREO+Y from 40m</b> <b>40m @ 0.06% (638ppm) TREO+Y from 104m</b> <b>4m @ 0.06% (630ppm) TREO+Y from 112m to EOH</b>
<b>GHC008</b>	<b>88m @ 0.09% (909ppm) TREO+Y from 0m</b> <b>Including 12m @ 0.13% (1309ppm) TREO+Y from 24m</b> <b>and 16m @ 0.13% (1344ppm) TREO+Y from 64m</b>

Significant base metal anomalism was returned from the following holes associated with metagabbroic units;

<b>GHC008</b>	<b>88m of 237ppm Cu from 88m to 172m</b>
<b>GHC009</b>	<b>108m at 305ppm Cu from 4m to 108m</b>

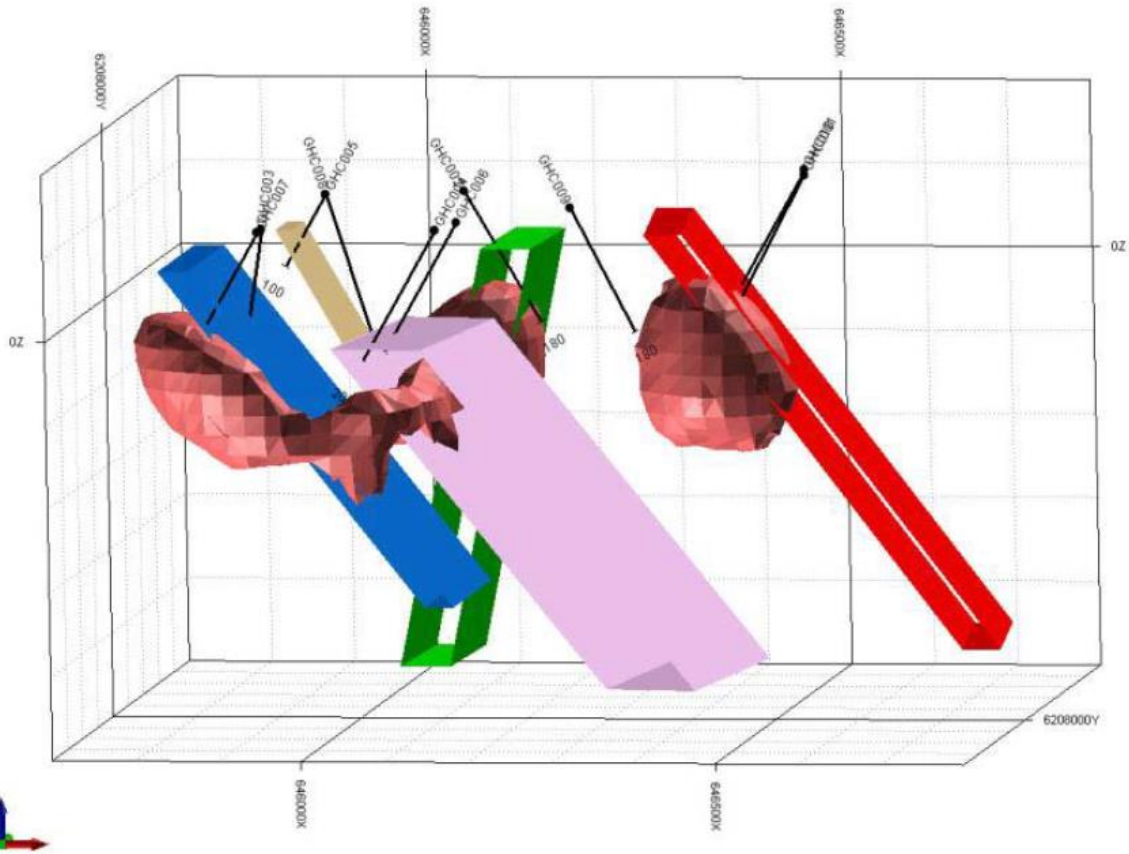
The Dodgey-Torquata system shows elevated barium (to 0.7%), scandium (20-100ppm), and phosphorus (>0.5% to 4%) associated with hematite-biotite altered, alkaline gabbro-norite. Copper and REE enriched alkaline gabbros are associated with carbonatitic magma series.

Inspection of the existing modelling shows that a magnetic isosurface model remains untested at depth (Figure 6). This is a target for discovering deeper base metal bearing gabbros, or REE enriched intrusive units.

EMT will renew the magnetic inversion model to firm up a target at depth. The magmatic complex has not been explored by electrical geophysics, which is a priority for EMT once all usual land access and compensation agreements are in place.



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**Figure 6 Dodgegy-Torquata historical magnetic models and drilling**

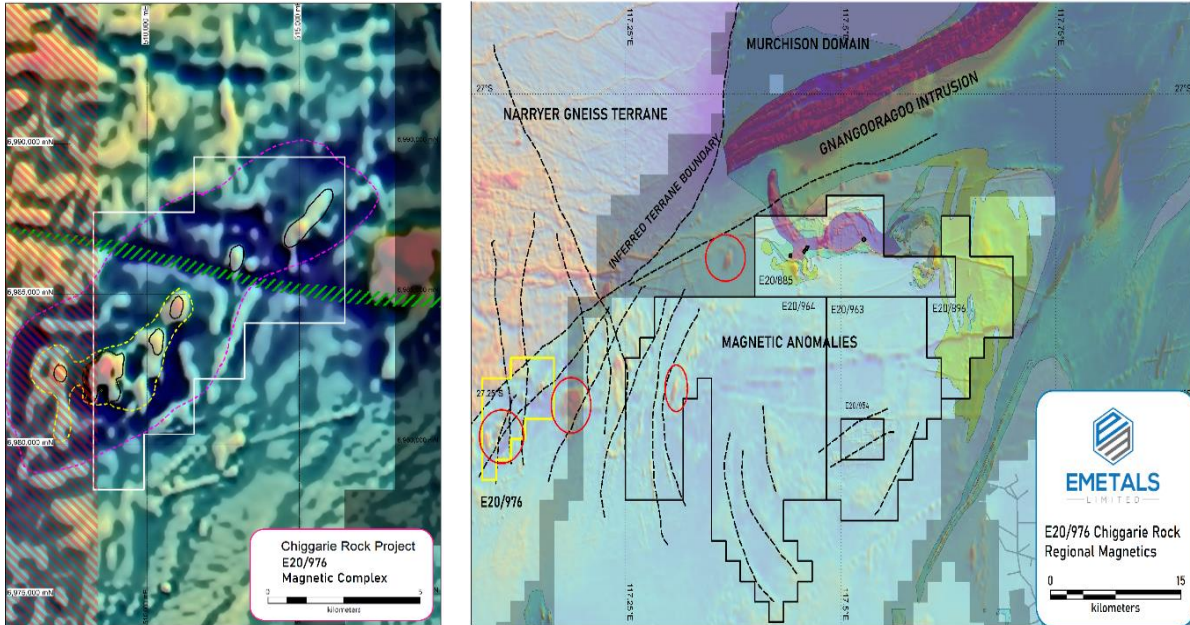
### CHIGGARIE ROCK PROJECT

Chiggare Rock (E20/976) is an unexplored magnetic anomaly located in the Murchison, approximately 110 kilometres west of Cue. The tenement is approximately 15 kilometres west of the Poona Project and is accessible by station tracks and roads.

The Chiggare Rock anomaly lies directly along strike from the Gnangooragoo Complex, on the interpreted terrane boundary between the Murchison Domain and the Narryer Terrane, and is a prominent magnetic feature composed of both positive and negative amplitude magnetic anomalies (Figure 7). A series of these magnetic anomalies are present within proximity to the interpreted terrane boundary.



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**Figure 7 E20/976, Chiggarie Rock Project. Interpreted regional setting on the terrane boundary**

EMT's recent discovery of the Mughal PGE prospect on E20/885 at Poona has highlighted the prospectivity of this area to host Ni-Cu-PGE mineralisation. EMT is planning a surface geochemical program over the area to detect any Ni-Cu-PGE or rare earth element anomalies and will evaluate the exploration opportunity of the project.

### COMMERCIAL TERMS

EMT has entered into an agreement to acquire 100% of the fully paid ordinary shares in the capital of SOC Resources Pty Ltd (**SOC**), the legal and beneficial owner of the three projects, from Pennyweight Minerals Pty Ltd (ACN 641 738 141). SOC is the legal and beneficial holder of three (3) granted exploration licences and one (1) exploration licence application, each located in Western Australia.

In consideration for the acquisition EMT has agreed to issue the Vendor:

- 5,000,000 fully paid ordinary shares in the capital of EMT; and
- 5,000,000 options to acquire fully paid ordinary shares in the capital of EMT, exercisable at \$0.05 on or before 31 December 2022.

The agreement is unconditional and is otherwise on ordinary commercial terms.





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SOC Resources has four tenements in the state of Western Australia, as set out below.

Tenement ID	Project	Sub-Blocks	Applied	Granted	Expiry	Expenditure
E63/2046	Cowalinya North	26	06/07/2020	21/09/2020	20/09/2025	\$30,000
E63/2066	Cowalinya South	31	26/10/2020	10/12/2020	25/10/2025	\$32,000
E20/976	Chiggarie Rock	16	-	N/A	N/A	\$20,000
E70/5654	Dodgey-Torquata	9	5/11/20	23/12/20	22/12/2025	\$20,000

## DIRECTOR OPTIONS

Finally, EMT has considered the current equity-based remuneration of its directors and has agreed to issue eMetals Director Mathew Walker a total of 10 million options to acquire EMT shares on the same terms and conditions as the options which were approved by shareholders at EMT's 2020 Annual General Meeting.

This issue of options to Mr Walker will ensure all EMT directors have been issued the equivalent number of incentive equity.

This announcement has been authorised by the Board of eMetals Limited.

*For, and on behalf of, the Board of the Company*

**Mathew Walker**

Director

**EMETALS Limited**

**- ENDS -**

*Shareholders and other interested parties can speak to Mr Sonu Cheema if they have any queries in relation to this announcement: +618 6489 1600*

### Forward looking statements

This announcement contains forward-looking statements which are identified by words such as 'may', 'could', 'believes', 'estimates', 'targets', 'expects', or 'intends' and other similar words that involve risks and uncertainties. These statements are based on an assessment of present economic and operating conditions, and on a number of assumptions regarding future events and actions that, as at the date of this announcement, are expected to take place. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties, assumptions and other important factors, many of which are beyond the control of the Company, the directors and our management. We cannot and do not give any assurance that the results, performance or achievements expressed or implied by the forward-looking statements contained in this prospectus will actually occur and investors are cautioned not to place undue reliance on these forward-looking statements. We have no intention to update or revise forward-looking statements, or to publish prospective financial information in the future, regardless of whether new information, future events or any other factors affect the information contained in this announcement, except where required by law. These forward looking statements are subject to various risk factors that could cause our actual results to differ materially from the results expressed or anticipated in these statements.



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**Competent Persons Statement**

The information in this announcement that relates to Exploration Results is based on and fairly represents information and supporting documentation prepared by Mr Roland Gotthard. Mr Gotthard is a consultant geologist for eMetals and a member of the Australian Institute of Mining and Metallurgy. Mr Gotthard has sufficient experience relevant to the styles of mineralisation and types of deposits which are covered in this announcement and to the activity which they are 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' ("JORC Code"). Mr Gotthard consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.

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**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
<ul style="list-style-type: none"> <li>Sampling techniques</li> </ul>	<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.</li> <li>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>Auger drilling was sampled via grab sampling of the most carbonate reactive soil profile with a maximum depth of 2.5m</li> <li>Aircore drilling was sampled on a 4m composite basis from surface to end of hole, using scoop composites of saprolite, for gold assay</li> <li>Aircore drilling at Cowalinya was sampled at end of hole via scoop sampling for multi-element assay</li> <li>RC drilling at Dodgey-Torquata was undertaken using a truck mounted face-sampling reverse circulation drill method with samples collected every 1m using a conical splitter</li> </ul>
Drilling techniques	<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>Auger drilling at Cowalinya was undertaken by a Land cruiser mounted auger drilling rig</li> <li>Aircore drilling at Cowalinya was undertaken by a truck mounted air core drilling rig with 3.5" air core blade to blade refusal</li> <li>RC drilling at Dodgey-Torquata was undertaken using a face-sampling RC drill bit</li> </ul>
Drill sample recovery	<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>Historical drill recoveries were not recorded in the WAMEX data files for all samples</li> <li>Sample recoveries are unlikely to be sufficiently bad for the intervals of interest and within the geology of interest to have unduly influenced the results</li> <li>No relationship between grade and sample recovery can be established at this time</li> </ul>

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Criteria	JORC Code explanation	Commentary
Logging	<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 qualitatively logged</li> <li>Drilling is logged qualitatively by the on-site geologist from drill chip samples taken every metre</li> <li>Auger drilling was logged for colour, carbonate content</li> <li>All drill metres are logged</li> </ul>
<ul style="list-style-type: none"> <li>Sub-sampling techniques and sample preparation</li> </ul>	<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 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 of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>Sampling techniques are considered adequate for all historical sampling for the purposes for which it was intended</li> <li>Auger drilling A100858 was scoop sampled from the most carbonate-rich section of the soil profile to detect calcrete-hosted Au; this methodology may not have adequately tested the REE content of laterite effectively and is considered partially effective</li> <li>AC end of hole sampling was via scoop or grab, and is adequate for whole rock geochemistry</li> <li>RC drilling at Dodgey-Torquata was composited on a 4 metre basis from 1 metre sampled, cone split RC chips</li> <li>1:50 samples as a minimum were duplicated in the field</li> <li>Grain size influence on REE results is unable to be adequately quantified based on historical information</li> </ul>
<ul style="list-style-type: none"> <li>Quality of assay data and laboratory tests</li> </ul>	<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>Cowalinya Auger drilling was assayed via 25g aqua regia digest and ICP/OES (major elements) or ICP/MS for (trace elements and REE) This is considered a partial digest in the context of Rare Earth Elements.</li> <li>Cowalinya AC drilling was assayed via 25g aqua regia digest and ICP/OES (major elements) or ICP/MS for (trace elements and REE) This is considered a partial digest in the context of Rare Earth Elements.</li> <li>RC samples from Dodgey-Torquata were digested by 4-Acid Digest 25g, with ICP-MS finish for trace and rare earth elements</li> <li>RC samples at Dodgey-Torquata were assayed by XRF fusion for major elements and 25g fire assay for Au, Pt, Pd</li> </ul>



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Criteria	JORC Code explanation	Commentary
<ul style="list-style-type: none"> <li>Verification of sampling and assaying</li> </ul>	<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>Historical data was downloaded from WAMEX. Anglo American data from A100858 is presumed to have been substantially verified and stored in a relational database</li> <li>Historical data from Dodgey-Torquata has no known data verification or QAQC processes, however it is considered substantially reliable</li> <li>Rare Earth Element (REE) results in this release are presented as oxides (TREO+Y), with conversion factors applied to convert from element to oxide.</li> <li>Element oxides for rare earth elements, including Y were converted from elemental assays using conversion factors from <a href="https://www.jcu.edu.au/advanced-analytical-centre/services-and-resources/resources-and-extras/element-to-stoichiometric-oxide-conversion-factors">https://www.jcu.edu.au/advanced-analytical-centre/services-and-resources/resources-and-extras/element-to-stoichiometric-oxide-conversion-factors</a></li> </ul>
<ul style="list-style-type: none"> <li>Location of data points</li> </ul>	<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>Auger drilling was located using a Trimble GPS unit in the field</li> <li>Aircore drilling was located using handheld GPS</li> <li>Datum is MGA 1994 Zone 50 or 51 South, with AC collars presented in Lat/Long WGS84S</li> <li>Accuracy is +/-3m and adequate</li> </ul>
<ul style="list-style-type: none"> <li>Data spacing and distribution</li> </ul>	<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>N/A</li> </ul>
<ul style="list-style-type: none"> <li>Orientation of data in relation to geological structure</li> </ul>	<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>Vertical drilling was undertaken to test the saprolite for Au mineralisation and is considered appropriate for discussion of REE in the manner and context herein</li> <li>Vertical drilling is the most appropriate method to test flat blanket style geology</li> </ul>
<ul style="list-style-type: none"> <li>Sample security</li> </ul>	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<ul style="list-style-type: none"> <li>Audits or reviews</li> </ul>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>



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## Section 2 Reporting of Exploration Results

Criteria listed in the preceding section also apply to this section

Criteria	JORC Code explanation	Commentary
<ul style="list-style-type: none"> <li>Mineral tenement and land tenure status</li> </ul>	<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 licence to operate in the area.</li> </ul>	<ul style="list-style-type: none"> <li>All tenure is held 100% by SOC Resources Pty Ltd</li> <li>E20/976 is under application and may require heritage protection agreements with affected Native Title Parties prior to grant</li> <li>E70/5654 is granted, but will require negotiation of a land access agreement with affected landholders prior to conducting exploration</li> </ul>
<ul style="list-style-type: none"> <li>Exploration done by other parties</li> </ul>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>Exploration results were sourced from WAMEX exploration reports available from the Department of Mines and Resources of Western Australia online databases as detailed on 28th January 2021</li> <li>Substantive data was obtained from;               <ul style="list-style-type: none"> <li>A100858</li> <li>A106095</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>Geology</li> </ul>	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>Cowalinya is saprolite hosted REE, potentially of ionic adsorption clay (IAC) type</li> <li>Dodgey-Torquate is an alkaline gabbro-norite intrusion enriched in phosphorus and REE</li> <li>Chiggarie Rock is hosted within Archaean granite-gneiss, granite and probable Proterozoic sills or dykes of unknown type</li> </ul>
<ul style="list-style-type: none"> <li>Drill hole Information</li> </ul>	<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>Drill location data for historical AC and RC drilling is tabulated in Appendix 1</li> <li>Auger drilling is not tabulated due to brevity; all data is available in standardised format from the online WAMEX database maintained by the Western Australian Government</li> </ul>

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Criteria	JORC Code explanation	Commentary
<ul style="list-style-type: none"> <li>Data aggregation methods</li> </ul>	<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>Total Rare Earth Oxide + Yttrium is a widely used 'industry standard' convention for reporting Rare Earth Elements</li> <li>TREO+Y is calculated by conversion of element assays (in ppm) into oxide (in ppm) and the sum of all REE's plus Yttrium is then calculated</li> <li>Scandium is sometimes included, but is excluded here as no recoverability of Sc is expected from the mineralisation</li> </ul>
<ul style="list-style-type: none"> <li>Relationship between mineralisation widths and intercept lengths</li> </ul>	<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>N/A</li> </ul>
<ul style="list-style-type: none"> <li>Diagrams</li> </ul>	<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>A map showing tenement locations has been included</li> <li>Maps showing the distribution of mineralised occurrences and anomalies has been provided</li> </ul>
<ul style="list-style-type: none"> <li>Balanced reporting</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>It is unfeasible and not considered relevant to present auger assays in tabulated form</li> <li>All significantly anomalous samples referred to in the text are presented in the Appendices where appropriate</li> <li>The reader is referred to the appropriate historical exploration information that is readily available from Government websites. The Company does not republish WAMEX reports in order to maintain the integrity of the data as presented by the Department of Mines and Resources.</li> </ul>
<ul style="list-style-type: none"> <li>Other substantive exploration data</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>N/A</li> </ul>
<ul style="list-style-type: none"> <li>Further work</li> </ul>	<ul style="list-style-type: none"> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul style="list-style-type: none"> <li>Drilling of the Cowalinya tenement and assaying of all saprolite with appropriate digestion methods</li> <li>Electromagnetic Geophysical surveys of Dodgey-Torquata</li> <li>Basic reconnaissance and mapping of Chiggarie Rock</li> </ul>



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**Appendix 1: Tabulated Data**  
**Table 1: Collar Locations**

Hole_id	Project	MGA_E	MGA_N	RL	Azimuth	Dip	Depth
GHC001	Dodgey	6208352	646487	110.36	270	-60	186
GHC002	Dodgey	6208140	646110	111.6	90	-60	180
GHC004	Dodgey	6207760	646145	115.01	270	-60	180
GHC005	Dodgey	6208048	645958	118.78	270	-61	100
GHC006	Dodgey	6207844	646155	113.16	270	-60	86
GHC007	Dodgey	6207680	645945	121.47	270	-60	150
GHC008	Dodgey	6208050	645960	118.78	135	-60	180
GHC009	Dodgey	6208010	646262	108.83	45	-60	174

Hole_ID	Project	Longitude	Latitude	RL	Azimuth	Dip	Depth
SGA095	Cowalinya	122.0733	-33.0871	231	333	-90	21
SGA096	Cowalinya	122.0839	-33.0871	235	333	-90	58
SGA097	Cowalinya	122.0946	-33.0871	230	333	-90	65
SGA098	Cowalinya	122.1055	-33.087	231	333	-90	26
SGA099	Cowalinya	122.116	-33.087	225	333	-90	13
SGA101	Cowalinya	122.1269	-33.0869	226	333	-90	60
SGA102	Cowalinya	122.1333	-33.0812	229	333	-90	29
SGA103	Cowalinya	122.1412	-33.0754	233	333	-90	18
SGA104	Cowalinya	122.1402	-33.0666	236	333	-90	27
SGA105	Cowalinya	122.144	-33.0577	244	333	-90	24
SGA106	Cowalinya	122.1488	-33.0511	248	333	-90	15
SGA107	Cowalinya	122.1539	-33.0439	248	333	-90	25
SGA108	Cowalinya	122.1578	-33.0358	250	333	-90	57
SGA109	Cowalinya	122.1607	-33.0274	248	333	-90	53
SGA110	Cowalinya	122.1645	-33.0193	247	333	-90	16
SGA111	Cowalinya	122.1683	-33.0114	249	333	-90	51
SGA112	Cowalinya	122.1716	-33.0035	249	333	-90	67

**Table 2: End of Hole Assays with TREO+Y, from collars on SOC Resources Pty Ltd Tenements**

Hole_ID	Depth	TREO+Y	Ce2O3	Dy2O3	Er2O3	Eu2O3	Gd2O3	Ho2O3	La2O3	Lu2O3	Nd2O3	Pr2O3	Sm2O3	Tb4O7	Tm2O3	Yb2O3	Y2O3	P_ppm	Th_ppm	Zr_ppm
SGA095	21	139.38	55.4	3.0	1.9	0.7	3.3	0.6	21.5	*	25.1	6.6	4.9	0.5	0.3	2.3	13.3	32.0	10.9	11.0
SGA096	58	287.03	99.1	5.0	2.4	1.3	7.5	0.9	63.5	*	54.4	13.9	9.4	0.9	0.3	2.0	26.4	458.0	11.2	3.5
SGA097	65	169.80	54.4	5.1	3.0	1.0	5.9	1.1	25.5	*	27.5	6.6	5.6	0.8	0.4	2.3	30.6	430.0	5.4	1.8
SGA098	26	423.11	183.0	6.1	2.3	2.5	9.1	1.0	76.9	*	82.2	22.0	12.9	1.1	0.3	1.5	22.2	373.0	8.3	2.9
SGA099	13	119.99	48.1	2.0	1.0	0.5	2.8	0.4	23.9	*	20.5	5.4	3.5	0.3	0.1	0.8	10.6	376.0	4.9	3.7
SGA101	60	198.53	72.7	3.9	1.9	1.2	5.5	0.7	37.1	*	36.2	9.1	6.7	0.7	0.3	1.6	20.9	375.0	6.2	4.5
SGA102	29	134.08	58.9	2.1	0.8	0.6	2.9	0.3	24.8	*	23.9	6.6	4.2	0.4	0.1	0.5	8.0	66.0	13.4	8.1
SGA103	18	458.03	212.1	7.7	3.0	2.2	10.0	1.3	79.1	*	76.0	20.4	13.5	1.4	0.4	2.2	28.6	283.0	10.0	3.0
SGA104	27	136.37	58.5	1.8	0.6	0.5	2.4	0.3	31.5	*	22.1	6.7	3.8	0.3	0.1	0.4	7.4	61.0	8.5	5.2
SGA105	24	24.72	10.5	0.5	0.2	0.1	0.5	0.1	4.6	*	3.8	1.1	0.7	0.1	0.0	0.2	2.3	30.0	4.2	6.5
SGA106	15	9.55	3.5	0.2	0.1	0.0	0.2	0.0	1.9	*	1.3	0.4	0.3	0.0	0.0	0.1	1.3	0.0	4.7	6.8
SGA107	25	1005.24	418.9	21.5	9.9	6.2	27.0	3.9	149.9	*	177.5	43.1	34.3	3.7	1.3	8.3	99.8	299.0	25.7	8.3
SGA108	57	260.98	102.7	5.3	2.9	1.1	6.2	1.0	46.1	*	42.3	11.4	7.3	0.9	0.4	2.4	30.9	86.0	16.1	24.5
SGA109	53	835.24	113.9	21.8	12.1	8.2	28.7	4.5	213.7	*	153.3	37.8	26.3	3.7	1.5	8.1	201.6	208.0	2.1	4.7
SGA110	16	612.87	285.0	2.6	1.0	2.5	5.4	0.4	162.2	*	100.8	28.7	10.7	0.5	0.1	0.8	12.1	200.0	17.5	5.2
SGA111	51	246.71	106.9	2.4	1.2	1.2	3.5	0.5	56.6	*	41.2	11.7	5.3	0.4	0.2	1.1	14.5	404.0	7.2	13.8
SGA112	67	1379.79	279.0	21.4	9.6	14.4	32.5	3.8	376.4	*	367.4	103.7	54.0	3.9	1.3	7.9	104.4	250.0	17.1	12.4

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**Table 3: Significant Auger Samples, Cowalinya Project**

SampleID	MGA_E	MGA_N	RL	Depth	TREO_Y	La2O3	CeO2	Nd2O3	Pr2O3	Sm2O3	Gd2O3	Eu2O3	Dy2O3	Er2O3	Ho2O3	Tb2O3	Tm2O3	Yb2O3	Y2O3
NOR00702	413,798	6,338,675	231	1	1114	151	509	180	46	32	29	5	24	11	4	4.2	1.5	9	108
NOR03942	415,797	6,342,499	247	1	441	109	76	115	28	22	18	5	15	8	2.6	2.5	1.1	6	114
NOR03984	417,004	6,340,493	240	1	320	38	187	53	13	12	9	2	8	4	1.4	1.3	0.7	5	44
VKU15199	420,397	6,344,507	237	1	320	76	82	72	18	13	13	3	10	6	1.8	1.7	0.8	5	75
VKU15146	425,804	6,345,501	247	1	298	67	57	81	19	16	15	4	10	6	1.8	1.8	0.7	4	71
VKU15247	415,595	6,341,499	237	1	291	7	295	11	3	3	2	1	3	2	0.5	0.5	0.3	2	10
NOR00683	416,791	6,337,601	219	7	281	62	57	72	17	13	13	3	11	6	2.0	1.8	0.8	5	68
NOR04027	425,991	6,340,615	235	1	280	59	65	64	16	12	11	3	9	6	1.7	1.5	0.7	5	80
VKU15284	422,797	6,341,500	241	1	272	69	59	72	18	13	12	3	9	5	1.5	1.5	0.6	4	55
NOR03949	417,182	6,342,544	264	1	272	65	114	65	17	10	7	2	5	2	0.7	0.8	0.3	2	30
VKU15196	420,999	6,344,506	235	1	268	64	69	62	16	12	11	3	9	5	1.6	1.4	0.7	4	59
VKU15036	424,802	6,348,501	246	1	263	67	67	64	16	12	11	3	8	4	1.4	1.4	0.6	3	52
VKU15288	423,599	6,341,500	245	1	258	56	76	64	16	13	11	3	8	4	1.4	1.4	0.6	4	47
VKU15198	420,603	6,344,503	240	1	258	61	67	59	15	11	10	3	8	5	1.5	1.4	0.7	4	58
VKU15187	422,800	6,344,500	255	1	255	62	63	65	16	12	10	3	8	4	1.4	1.4	0.5	3	51
VKU15949	425,996	6,339,608	214	1	248	50	55	50	12	10	11	2	10	6	1.9	1.6	0.8	5	79
NOR03256	425,402	6,343,534	251	1	247	58	58	61	15	12	11	3	8	5	1.4	1.6	0.6	4	53
NOR03257	425,606	6,343,508	251	1	246	57	58	59	15	12	11	3	8	5	1.5	1.6	0.6	4	58
NOR00681	416,399	6,337,601	218	7	244	48	67	56	14	10	11	3	9	5	1.6	1.4	0.7	4	58
NOR01079	423,002	6,338,776	220	7	240	40	106	44	11	8	8	2	7	4	1.2	1.1	0.5	3	48
VKU15201	420,201	6,344,504	244	1	238	54	66	57	14	11	10	3	8	5	1.4	1.4	0.6	4	46
VKU15167	426,804	6,344,501	249	1	234	49	67	55	14	11	10	3	8	4	1.4	1.3	0.6	3	50
NOR03078	421,998	6,347,499	242	1	227	53	75	50	13	9	9	2	7	4	1.1	1.2	0.5	3	40
NOR03147	421,004	6,346,500	238	1	223	59	55	55	14	10	9	2	7	4	1.2	1.3	0.5	3	42
VKU15281	422,200	6,341,495	243	1	220	45	83	47	11	9	8	2	6	3	1.1	1.1	0.4	3	40
NOR03971	419,587	6,340,506	232	1	219	52	48	54	14	11	9	2	7	4	1.3	1.2	0.5	3	53
VKU15188	422,604	6,344,505	250	1	219	50	58	55	13	11	9	2	7	4	1.2	1.2	0.5	3	44
VKU15205	419,403	6,344,505	247	1	218	45	66	48	12	10	9	2	7	4	1.3	1.2	0.5	3	48
NOR03237	421,802	6,343,497	252	1	218	50	61	51	13	10	9	2	7	4	1.2	1.3	0.5	3	45
NOR03255	425,193	6,343,506	247	1	217	49	46	55	13	11	10	2	7	4	1.3	1.4	0.6	3	51
NOR03960	419,198	6,342,505	260	1	213	53	53	52	13	10	8	2	7	3	1.1	1.1	0.4	3	44
VKU14973	423,204	6,349,495	246	1	209	50	69	48	13	9	8	2	6	3	0.9	1.0	0.4	2	36
VKU15079	423,399	6,349,502	250	1	206	49	60	47	12	9	8	2	6	4	1.1	1.1	0.5	3	42
NOR03214	417,407	6,343,496	263	1	204	46	53	52	13	10	9	2	7	4	1.2	1.3	0.5	3	40
VKU15192	421,805	6,344,498	250	1	204	47	57	47	12	9	8	2	7	4	1.2	1.1	0.5	3	43
NOR04017	423,992	6,340,599	235	1	203	34	112	34	9	7	5	1	4	2	0.8	0.7	0.3	2	27
NOR03117	427,003	6,346,509	243	1	202	53	46	48	12	9	9	2	7	4	1.2	1.2	0.5	3	44
NOR03098	426,002	6,347,496	250	1	201	43	73	42	11	8	8	2	6	3	1.1	1.2	0.5	3	35
NOR03236	421,600	6,343,498	251	1	201	46	58	47	12	9	8	2	6	4	1.1	1.2	0.5	3	39

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**Table 4: Assay data for Dodgey-Torquata RC Holes**

Hole	From	To	Cu	TREO+Y	La	Ce	Nd	Pr	Gd	Sm	Er	Eu	Ho	Lu	Dy	Tb	Tl	Y	Yb
GHC001	112	116	47	808	171	360	135	40	18.0	25	3	5.5	1.1	0.22	7	1.9	0.4	37.3	1.8
	116	120	25	806	176	360	132	40	17.2	24	3	5.4	1.1	0.24	7	1.9	0.6	36.7	1.9
	120	124	25	830	186	375	133	41	16.8	24	3	5.9	1.0	0.22	7	1.8	0.4	33.5	1.7
	124	128	25	846	190	381	138	42	17.2	24	3	6.1	1.0	0.22	7	1.8	0.4	33.5	1.7
	128	132	29	706	155	314	112	34	15.2	20	3	5.1	1.0	0.27	7	1.7	0.4	35.3	2.2
	132	136	21	545	125	245	91	27	9.9	14	2	3.5	0.6	0.15	4	1.1	0.6	19.9	1.1
	136	140	24	630	143	282	101	31	12.8	18	2	4.2	0.8	0.17	5	1.4	0.6	25.9	1.4
	136	140	22	639	143	286	109	31	12.2	17	2	4.2	0.7	0.18	5	1.3	0.4	25.0	1.4
	140	144	20	525	118	234	88	27	9.7	14	2	3.6	0.6	0.15	4	1.1	0.6	19.9	1.1
	144	148	26	628	144	282	100	31	12.6	18	2	4.5	0.7	0.17	5	1.4	0.6	25.1	1.4
	148	152	29	765	172	349	122	38	15.1	21	3	5.4	0.9	0.19	6	1.6	0.4	28.7	1.5
	152	156	37	931	209	423	150	46	18.7	26	3	6.3	1.0	0.23	7	2.0	0.4	35.2	1.8
	156	160	39	878	195	398	149	44	16.4	24	4	5.7	1.0	0.20	6	1.8	0.3	30.2	1.6
	160	164	33	703	158	316	118	35	13.4	19	3	4.5	0.9	0.19	6	1.4	0.4	26.2	1.5
	164	168	61	681	155	309	111	34	12.3	18	3	4.4	0.8	0.18	5	1.4	0.4	25.4	1.4
	168	172	18	540	123	242	80	23	10.7	14	3	3.4	0.9	0.20	5	1.3	0.4	29.1	1.6
	172	176	37	764	176	348	125	37	13.4	20	3	4.8	0.9	0.18	6	1.5	0.4	26.9	1.5
176	180	21	628	143	282	102	31	11.5	17	3	3.9	0.8	0.18	5	1.3	0.6	24.9	1.4	
180	184	23	563	131	258	91	28	9.6	14	2	3.7	0.6	0.14	4	1.0	0.4	18.2	1.0	
184	186	31	612	149	281	97	30	9.7	15	2	3.9	0.6	0.14	4	1.1	0.4	17.4	1.0	
GHC002	0	4	25	140	30	59	25	6	3.1	4	1	0.6	0.3	0.11	2	0.4	0.2	7.8	0.9
	4	8	16	1658	369	750	289	79	29.2	46	7	9.7	2.0	0.44	14	3.3	0.6	56.1	3.5
	8	12	18	1353	287	569	253	64	27.9	40	7	9.1	2.1	0.52	13	3.1	0.7	71.9	4.1
	12	16	15	1141	242	495	218	55	22.2	34	5	7.2	1.4	0.34	10	2.5	0.6	44.4	2.6
	16	20	15	1282	280	548	247	64	25.1	38	5	8.8	1.4	0.31	10	2.7	0.3	48.0	2.5
	20	24	16	1279	278	556	240	65	24.9	37	5	8.8	1.4	0.30	10	2.7	0.3	47.6	2.4
	24	28	22	766	172	331	141	37	14.2	21	3	4.0	0.9	0.22	6	1.6	0.4	31.4	1.6
	28	32	22	1237	264	528	248	60	23.5	36	5	8.1	1.4	0.30	10	2.6	0.3	47.4	2.4
	32	36	28	1195	254	507	239	58	23.5	35	5	7.8	1.4	0.31	10	2.5	0.4	48.1	2.4
	36	40	17	790	177	340	152	39	13.7	22	3	5.0	0.9	0.19	6	1.5	0.4	29.7	1.6
	40	44	23	1101	240	466	209	52	21.8	31	5	6.3	1.5	0.34	10	2.5	0.6	51.0	2.7
	44	48	15	1161	266	517	212	55	19.5	30	4	5.4	1.1	0.23	8	2.1	0.3	38.6	1.8
	48	52	15	1264	272	552	246	62	23.2	36	4	7.9	1.3	0.28	10	2.5	0.3	45.3	2.3
	52	56	12	1041	224	456	204	51	18.6	29	4	7.1	1.1	0.22	8	2.0	0.3	34.7	1.7
	52	56	13	1158	257	508	222	57	20.5	32	4	7.7	1.1	0.24	8	2.2	0.3	35.8	1.8
	56	60	6	424	109	185	71	19	6.1	9	1	5.2	0.4	0.10	3	0.7	0.4	12.8	0.8
	60	64	16	1057	236	465	201	51	18.6	28	3	6.6	1.0	0.22	7	2.0	0.3	35.0	1.7
	64	68	17	817	195	350	145	38	13.6	20	4	5.5	1.0	0.28	7	1.6	0.4	35.0	2.2
	68	72	47	1365	298	596	234	65	26.4	37	8	6.6	2.2	0.52	14	3.3	0.4	68.6	4.6
	72	76	19	1179	251	512	230	58	21.4	33	4	7.4	1.3	0.30	9	2.4	0.3	45.3	2.4
	76	80	18	1270	271	551	253	62	23.9	36	5	8.4	1.3	0.28	10	2.6	0.3	43.9	2.3
	80	84	20	942	203	401	188	46	18.0	27	4	6.1	1.1	0.24	7	1.9	0.3	37.8	1.8
	84	88	30	1175	243	508	233	58	23.4	35	4	7.7	1.3	0.28	10	2.5	0.3	46.2	2.4
	88	92	18	1111	236	472	223	54	22.1	33	4	7.3	1.3	0.27	9	2.4	0.3	43.8	2.2
	92	96	18	1084	224	459	222	54	22.1	33	4	7.4	1.3	0.27	9	2.4	0.3	43.6	2.2
	96	100	18	1002	208	424	204	50	20.7	31	4	7.1	1.2	0.25	8	2.2	0.2	39.0	1.9
	100	104	19	1042	219	442	215	51	20.3	31	4	7.2	1.2	0.24	8	2.2	0.2	40.1	1.9
104	108	16	1006	210	430	203	49	20.2	30	4	7.0	1.2	0.24	8	2.1	0.3	39.1	1.9	
108	112	19	1085	219	474	217	54	21.2	32	4	7.7	1.2	0.24	8	2.3	0.2	41.7	1.9	
112	116	20	1095	223	472	225	53	21.8	33	4	7.4	1.2	0.24	9	2.3	0.2	41.5	1.9	
116	120	21	1044	216	444	212	52	21.2	32	4	7.4	1.2	0.25	9	2.3	0.2	40.9	1.9	

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Hole	From	To	Cu	TREO+Y	La	Ce	Nd	Pr	Gd	Sm	Er	Eu	Ho	Lu	Dy	Tb	Tl	Y	Yb
GHC002	120	124	20	661	135	272	134	32	14.2	20	3	4.5	0.9	0.22	6	1.6	0.4	34.4	1.7
	124	128	18	721	147	299	148	35	16.3	23	3	5.5	1.0	0.23	7	1.8	0.3	32.0	1.8
	128	132	17	763	168	340	141	37	13.4	20	3	3.5	0.8	0.23	6	1.5	0.8	26.3	1.7
	132	136	18	653	133	273	129	31	14.6	21	3	4.9	1.0	0.20	7	1.6	0.3	32.3	1.7
	132	136	20	699	140	290	141	34	15.6	22	3	5.2	1.0	0.22	7	1.7	0.3	35.6	1.8
	136	140	21	656	131	268	134	32	15.2	21	3	4.9	1.0	0.23	7	1.7	0.3	34.0	1.8
	140	144	15	663	136	276	128	32	14.3	20	4	4.5	1.0	0.23	7	1.6	0.2	35.9	1.8
	144	148	14	659	135	274	131	32	14.4	21	3	4.5	1.0	0.20	7	1.6	0.2	32.4	1.8
	148	152	24	585	121	247	113	28	12.4	18	3	4.2	0.8	0.17	6	1.4	0.2	28.6	1.5
	152	156	31	653	147	289	118	31	11.5	17	3	3.5	0.7	0.17	5	1.3	0.3	25.0	1.4
	156	160	61	654	137	275	127	31	13.1	19	3	4.4	0.9	0.23	6	1.5	0.2	32.4	1.8
	160	164	45	716	145	305	135	36	15.4	21	4	4.5	1.1	0.26	8	1.8	0.2	37.2	2.2
	164	168	20	542	106	227	106	27	12.6	17	3	3.9	0.9	0.20	6	1.4	0.2	29.8	1.7
	168	172	36	535	102	219	109	27	12.7	17	3	4.1	0.9	0.19	6	1.4	0.2	30.6	1.7
	172	176	20	87	19	32	14	4	2.0	2	1	0.5	0.3	0.18	2	0.3	0.1	7.7	1.4
	176	180	31	607	128	257	117	30	12.6	18	3	4.2	0.9	0.20	6	1.4	0.3	28.4	1.6
GHC004	12	16	43	917	211	416	153	44	15.7	22	5	4.5	1.2	0.31	8	1.8	0.3	32.6	2.5
	16	20	17	616	163	281	88	28	8.4	12	3	2.7	0.7	0.25	4	1.0	0.8	21.2	1.8
	20	24	21	393	104	185	53	17	5.0	7	2	1.9	0.4	0.15	3	0.6	0.9	12.8	1.0
	20	24	17	355	91	163	51	16	5.0	7	2	2.0	0.4	0.15	3	0.6	0.8	13.5	1.0
	24	28	35	827	181	358	142	39	16.1	22	5	6.4	1.2	0.32	8	1.8	0.6	43.0	2.4
	28	32	40	1161	237	491	226	58	25.7	35	6	9.1	1.6	0.35	11	2.8	0.6	54.0	2.8
	32	36	80	998	206	430	189	50	21.9	29	5	6.6	1.4	0.28	10	2.4	0.4	44.2	2.4
	36	40	47	648	130	273	118	31	15.0	19	5	3.8	1.2	0.28	8	1.8	0.7	39.4	2.5
	40	44	52	954	213	415	175	46	18.2	25	4	7.0	1.1	0.23	8	2.0	0.4	37.1	1.9
	44	48	56	918	199	406	171	44	17.5	25	4	6.2	1.0	0.20	7	1.9	0.3	32.0	1.7
	48	52	53	891	192	385	173	44	17.3	25	4	6.2	1.0	0.20	7	1.9	0.3	31.7	1.8
	52	56	66	917	194	406	173	45	18.3	25	4	6.2	1.0	0.22	7	2.0	0.2	32.5	1.7
	56	60	39	832	181	363	157	42	16.4	23	3	5.8	0.9	0.18	7	1.7	0.4	29.2	1.6
	60	64	39	1062	236	461	196	52	21.2	30	5	6.9	1.2	0.25	9	2.3	0.4	39.5	2.2
	64	68	177	648	143	281	121	32	12.4	18	3	4.4	0.8	0.17	5	1.4	0.3	23.5	1.4
	68	72	130	592	131	255	108	28	11.8	16	3	4.3	0.7	0.18	5	1.3	0.3	24.9	1.5
	72	76	96	483	101	206	91	24	9.9	14	3	4.0	0.7	0.16	5	1.2	0.3	21.3	1.3
	76	80	94	504	111	214	95	25	10.5	14	3	4.1	0.7	0.17	5	1.1	0.3	20.1	1.3
	80	84	96	521	115	228	95	26	9.8	14	2	3.9	0.6	0.15	4	1.1	0.4	19.3	1.3
	84	88	59	567	124	242	103	28	11.6	16	3	4.1	0.8	0.19	5	1.3	0.4	25.3	1.5
	88	92	38	794	186	357	135	36	13.4	20	3	4.4	0.8	0.19	6	1.5	0.7	27.0	1.6
	92	96	51	805	188	351	140	39	13.9	20	4	4.5	0.9	0.22	6	1.6	0.6	33.5	1.7
	96	100	57	523	111	218	100	25	11.6	15	3	3.7	0.8	0.17	5	1.3	0.4	26.7	1.5
	96	100	56	503	104	217	94	24	10.6	14	3	3.6	0.7	0.17	5	1.2	0.4	24.3	1.4
	100	104	31	1059	250	485	178	50	16.3	24	4	5.7	1.0	0.23	7	1.8	0.7	32.9	1.8
	104	108	38	967	230	431	161	46	16.4	23	4	5.0	1.1	0.27	8	1.8	0.6	36.3	2.2
	108	112	48	779	194	344	127	36	12.9	18	4	4.1	0.9	0.23	6	1.5	0.7	28.3	1.7
	112	116	57	444	100	193	77	21	9.1	12	2	3.3	0.6	0.15	4	1.0	0.4	19.9	1.1
	116	120	47	592	127	254	108	29	12.3	16	3	4.1	0.9	0.20	6	1.4	0.6	28.7	1.6
	120	124	38	642	140	274	119	30	13.4	17	3	4.5	0.9	0.22	6	1.4	0.7	29.2	1.6
	124	128	34	567	127	239	105	27	11.4	16	3	4.1	0.8	0.18	5	1.2	0.7	25.5	1.5
	128	132	49	575	124	244	109	27	11.9	16	3	4.0	0.8	0.19	6	1.3	0.6	26.5	1.6
GHC005	0	4	48	639	142	282	102	31	14.1	19	3	4.7	1.0	0.22	7	1.6	0.2	29.2	1.7
	4	8	58	690	145	300	111	34	16.3	21	4	5.2	1.2	0.32	8	1.9	0.3	39.7	2.5
	8	12	78	857	172	365	140	41	21.4	27	7	6.4	1.8	0.56	11	2.5	0.4	56.5	4.1
	12	16	91	1021	218	454	166	50	22.8	30	6	7.4	1.5	0.40	10	2.5	0.9	47.9	3.2
	16	20	48	1722	360	770	293	87	37.5	54	8	12.0	2.2	0.48	15	4.0	1.2	74.9	3.9
	20	24	122	1549	339	707	250	78	31.9	45	7	9.9	1.9	0.39	13	3.4	0.8	59.2	3.2
	24	28	52	693	151	303	109	33	15.8	20	4	4.7	1.2	0.28	8	1.8	0.6	38.4	2.3
	28	32	51	731	157	320	118	35	16.4	22	4	5.2	1.1	0.26	8	1.8	0.4	39.1	2.2
	32	36	50	710	154	314	114	35	15.8	21	4	5.2	1.1	0.24	7	1.8	0.6	35.8	2.0
	36	40	5	264	56	111	41	12	6.3	8	2	1.4	0.6	0.16	4	0.8	0.9	19.4	1.3



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Hole	From	To	Cu	TREO+Y	La	Ce	Nd	Pr	Gd	Sm	Er	Eu	Ho	Lu	Dy	Tb	Tl	Y	Yb
GHC005	40	44	43	543	114	235	94	28	12.0	16	3	3.5	0.8	0.19	6	1.4	0.8	27.8	1.6
	44	48	64	835	177	364	136	40	19.1	25	5	5.8	1.4	0.34	9	2.2	0.6	45.2	2.8
	48	52	64	800	172	354	129	40	17.9	24	4	5.6	1.2	0.28	8	2.0	0.4	38.5	2.3
	52	56	55	655	141	288	106	32	14.6	19	4	4.4	1.0	0.24	7	1.6	0.4	35.2	1.9
	56	60	78	929	198	415	153	46	20.5	28	5	6.1	1.3	0.27	9	2.3	0.3	42.5	2.4
	60	64	54	681	138	294	115	34	16.6	22	4	5.0	1.1	0.24	7	1.8	0.4	38.5	2.0
	64	68	35	607	127	257	105	29	14.1	18	4	4.2	1.1	0.27	7	1.6	0.6	37.3	2.2
	68	72	54	756	154	329	131	38	18.6	24	4	5.8	1.1	0.24	8	2.0	0.3	38.6	1.9
	72	76	48	811	172	360	133	40	18.7	25	4	5.5	1.2	0.26	8	2.0	0.4	38.9	2.2
	76	80	43	732	158	321	121	36	16.1	22	4	5.1	1.0	0.24	7	1.8	0.4	35.4	1.9
	80	84	33	772	171	344	125	38	16.3	22	4	5.6	1.0	0.23	7	1.7	0.3	33.7	1.8
	84	88	35	750	167	335	121	37	15.4	21	4	5.6	1.0	0.22	6	1.7	0.3	32.9	1.8
	88	92	36	1647	368	767	257	81	34.9	46	7	3.7	2.0	0.38	14	3.8	0.3	58.4	3.0
	92	96	50	1006	230	459	154	48	21.0	28	5	3.6	1.3	0.28	9	2.3	0.4	41.8	2.4
	96	100	16	263	57	111	42	13	6.1	8	2	1.6	0.5	0.13	3	0.7	0.6	16.6	1.0
	60	64	57	717	145	309	122	35	17.6	23	4	5.2	1.2	0.25	8	1.9	0.4	40.5	2.0
GHC006	48	52	19	639	122	266	132	32	15.0	21	3	5.5	1.0	0.23	7	1.6	0.2	31.5	1.8
	52	56	21	527	104	221	102	26	12.0	16	3	4.2	0.8	0.22	6	1.4	0.4	27.2	1.8
	56	60	26	1421	297	623	275	72	28.1	41	5	9.1	1.6	0.32	11	3.0	0.3	51.0	2.6
	60	64	26	1224	256	535	231	62	25.2	37	5	7.1	1.5	0.30	10	2.6	0.3	47.9	2.6
	64	68	19	886	203	389	161	43	15.7	23	3	5.4	1.0	0.24	7	1.7	0.8	31.2	1.7
	68	72	19	740	163	323	136	36	14.2	19	3	4.0	0.9	0.23	6	1.6	0.4	29.5	1.7
	72	76	31	1121	233	484	220	56	22.5	32	5	7.4	1.4	0.28	10	2.4	0.3	43.8	2.4
	76	80	37	970	205	417	189	47	19.5	28	4	6.8	1.2	0.25	8	2.2	0.4	38.7	2.0
	80	84	92	768	165	335	147	38	14.6	21	3	5.2	0.8	0.19	6	1.6	0.6	28.1	1.5
	84	86	79	583	123	248	112	29	11.9	17	3	4.1	0.8	0.18	5	1.3	0.6	25.8	1.5
GHC007	0	4	68	603	123	261	107	32	14.5	19	3	5.0	1.1	0.24	8	1.8	0.1	25.0	1.9
	40	44	68	583	117	251	108	29	13.4	18	3	4.1	1.0	0.24	6	1.5	0.1	28.8	1.8
	44	48	25	468	103	211	79	23	8.8	13	2	2.7	0.6	0.18	4	1.0	0.3	18.5	1.3
	48	52	57	896	194	398	167	46	17.1	27	3	6.3	0.9	0.18	7	1.8	0.2	27.4	1.5
	52	56	32	688	152	309	122	34	12.6	19	2	4.3	0.8	0.18	6	1.4	0.4	21.6	1.4
	56	60	63	520	114	233	91	26	9.9	14	2	3.4	0.6	0.14	4	1.1	0.3	19.3	1.0
	104	108	89	532	117	237	94	26	10.1	15	2	3.9	0.7	0.16	5	1.1	0.2	19.6	1.3
	108	112	85	523	114	232	92	26	10.1	15	2	3.7	0.7	0.15	5	1.1	0.3	19.9	1.1
	112	116	98	540	116	239	98	27	10.4	16	2	4.1	0.7	0.16	5	1.2	0.2	19.9	1.3
	116	120	83	699	135	302	139	36	16.5	25	2	5.5	0.9	0.18	7	1.8	0.3	26.8	1.5
	120	124	117	1139	211	492	236	62	26.6	41	4	8.9	1.4	0.27	11	2.8	0.3	40.8	2.2
	124	128	78	753	138	321	152	39	18.4	27	3	6.1	1.1	0.24	8	2.0	0.3	33.8	1.9
	128	132	128	555	101	227	114	28	15.9	22	3	5.1	0.9	0.19	7	1.7	0.2	28.1	1.5
	132	136	115	507	97	213	100	26	13.0	19	2	4.2	0.8	0.19	6	1.4	0.3	23.4	1.5
	136	140	69	444	90	189	81	22	9.9	14	2	3.5	0.8	0.20	5	1.2	0.4	23.7	1.6
	140	144	72	690	136	296	132	35	15.6	23	3	5.3	1.0	0.25	7	1.7	0.2	31.6	1.9
	144	148	63	406	88	176	71	20	8.1	12	2	3.3	0.5	0.14	4	0.9	0.3	18.8	1.0
	148	150	50	359	81	155	61	17	7.3	11	2	3.0	0.6	0.17	4	0.9	0.3	16.4	1.3
	112	116	75	630	133	278	115	31	12.6	19	2	4.2	0.8	0.18	6	1.4	0.3	24.8	1.5
GHC008	0	4	41	761	170	340	136	39	14.2	22	2	4.8	0.9	0.17	6	1.6	-0.1	22.7	1.4
	4	8	61	1019	202	431	189	50	23.9	32	5	7.8	1.8	0.40	12	2.7	-0.1	57.9	3.2
	8	12	32	613	135	274	101	29	11.4	16	3	3.7	0.9	0.26	6	1.4	0.3	27.8	1.9
	12	16	43	875	184	387	152	43	18.1	26	4	5.5	1.4	0.38	9	2.1	0.2	39.1	2.8
	16	20	35	513	108	226	87	24	10.7	15	3	3.5	0.9	0.30	6	1.3	0.7	25.1	2.2
	20	24	51	975	204	437	174	48	18.9	29	4	6.7	1.3	0.35	9	2.2	0.6	37.1	2.6
	24	28	62	1401	310	642	247	73	23.4	38	4	8.6	1.3	0.31	10	2.6	0.7	37.8	2.3
	28	32	258	1218	264	549	217	62	22.6	35	4	7.7	1.3	0.32	10	2.4	0.7	40.6	2.4
	32	36	69	1309	291	587	225	66	24.6	36	5	6.6	1.6	0.41	11	2.8	0.8	48.6	3.1
	36	40	132	726	150	315	132	37	15.4	22	3	5.0	1.1	0.27	8	1.8	0.3	33.3	2.2



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Hole	From	To	Cu	TREO+Y	La	Ce	Nd	Pr	Gd	Sm	Er	Eu	Ho	Lu	Dy	Tb	Tl	Y	Yb
GCH008	40	44	76	727	147	315	134	36	16.1	23	3	4.9	1.2	0.27	8	1.8	0.3	33.8	2.2
	44	48	80	733	148	319	136	37	16.1	23	3	5.4	1.1	0.26	8	1.8	0.3	32.5	2.0
	48	52	79	688	135	292	129	34	16.1	22	3	4.9	1.2	0.27	8	1.9	0.3	37.0	2.2
	52	56	81	817	160	351	154	41	18.1	26	4	5.8	1.4	0.32	9	2.1	0.4	40.6	2.5
	56	60	77	682	134	289	128	34	15.9	22	3	4.9	1.2	0.28	8	1.9	0.4	35.9	2.2
	60	64	58	638	129	274	119	32	14.1	19	3	4.8	1.1	0.24	7	1.6	0.3	30.7	1.9
	64	68	46	1180	245	517	223	61	23.5	36	4	8.2	1.4	0.32	10	2.5	0.4	44.4	2.6
	68	72	43	1396	281	608	272	75	29.9	46	4	9.9	1.6	0.33	12	3.2	0.4	49.1	2.6
	72	76	65	1451	279	624	295	80	32.3	50	5	10.9	1.8	0.34	13	3.5	0.2	53.0	2.8
	76	80	62	1348	271	595	261	73	27.7	43	4	9.7	1.5	0.30	11	3.0	0.3	43.9	2.4
	80	84	53	769	155	331	139	38	16.3	23	4	4.5	1.4	0.43	9	1.9	0.3	41.0	3.4
	84	88	110	540	102	226	100	27	12.8	18	3	4.1	1.1	0.31	7	1.6	0.2	34.0	2.4
	84	88	115	527	100	220	98	26	12.8	17	3	4.0	1.1	0.33	7	1.5	0.2	33.0	2.5
	88	92	225	253	39	90	42	11	8.2	9	4	2.3	1.2	0.49	7	1.2	0.1	35.7	3.5
	92	96	275	162	18	43	24	6	7.0	6	4	1.8	1.3	0.58	7	1.1	0.1	38.2	4.2
	96	100	159	460	84	189	83	22	11.8	15	4	3.6	1.2	0.39	7	1.5	0.1	34.5	3.0
	100	104	189	377	65	146	67	18	10.4	13	4	3.1	1.3	0.47	7	1.4	0.2	36.2	3.3
	104	108	268	229	34	76	36	9	7.8	8	4	2.1	1.3	0.53	7	1.2	0.2	37.2	3.9
	108	112	223	272	42	96	45	12	8.6	10	4	2.5	1.3	0.51	7	1.3	0.1	37.8	3.8
	112	116	266	184	24	55	27	7	6.9	6	4	1.8	1.3	0.56	7	1.1	0.2	37.0	4.0
	116	120	252	179	23	52	27	7	7.1	7	4	1.9	1.3	0.57	7	1.1	0.1	36.3	4.2
	120	124	255	152	16	39	22	5	6.7	6	4	1.8	1.3	0.58	7	1.1	0.2	37.5	4.1
	124	128	252	141	15	35	20	5	6.3	5	4	1.7	1.3	0.55	7	1.0	0.2	35.6	3.9
	128	132	259	173	22	51	25	6	6.8	6	4	1.8	1.3	0.56	7	1.1	0.2	34.8	3.9
	132	136	266	159	18	42	23	6	6.6	6	4	1.8	1.3	0.56	7	1.1	0.2	37.7	4.1
	136	140	255	302	51	112	48	13	9.0	10	4	1.9	1.3	0.56	7	1.3	0.2	39.0	3.9
	140	144	223	373	71	148	60	17	9.7	11	4	2.0	1.3	0.50	7	1.4	0.2	37.3	3.5
	144	148	269	260	38	86	41	11	9.0	9	5	2.2	1.5	0.65	8	1.4	0.2	43.0	4.7
	148	152	133	538	104	225	98	26	12.3	17	4	3.9	1.2	0.39	7	1.5	0.2	34.9	3.0
	152	156	168	340	60	132	59	16	9.1	11	4	2.9	1.1	0.43	7	1.2	0.1	32.9	3.1
	156	160	249	185	24	55	28	7	7.0	7	4	2.0	1.3	0.55	7	1.1	0.1	37.2	4.0
	160	164	248	232	36	79	36	9	7.6	8	4	1.8	1.3	0.53	7	1.1	0.1	36.4	4.0
	160	164	254	227	34	76	34	9	7.7	8	4	1.9	1.3	0.56	7	1.2	0.2	37.5	3.9
	164	168	253	279	47	102	43	12	8.3	9	4	1.9	1.3	0.52	7	1.2	0.2	38.2	3.8
	168	172	280	156	17	40	22	5	6.8	6	4	1.8	1.3	0.57	7	1.1	0.2	38.4	4.1
	172	176	43	123	27	50	18	5	2.8	3	1	1.1	0.4	0.14	2	0.4	0.3	10.1	1.0
	176	180	7	75	16	30	12	3	1.8	2	1	0.7	0.2	0.07	1	0.3	0.2	5.8	0.5

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Hole	From	To	Cu	TREO+Y	La	Ce	Nd	Pr	Gd	Sm	Er	Eu	Ho	Lu	Dy	Tb	Tl	Y	Yb
GHC009	0	4	34	86	18	34	13	4	1.8	2	1	0.7	0.3	0.13	1	0.3	0.4	8.2	0.9
	4	8	291	211	31	62	29	7	7.0	6	6	1.7	1.3	0.55	7	1.0	0.4	47.5	3.9
	8	12	281	177	20	45	26	6	7.3	6	6	2.0	1.4	0.58	7	1.1	0.4	45.2	4.3
	12	16	330	171	20	45	26	6	6.9	6	5	2.0	1.3	0.52	7	1.1	0.2	40.6	3.8
	16	20	364	173	18	44	26	6	7.4	6	6	2.0	1.4	0.59	7	1.2	0.2	41.9	4.3
	20	24	324	157	16	39	23	5	6.6	5	5	1.8	1.3	0.52	7	1.0	0.2	40.9	4.0
	24	28	289	157	16	40	23	5	6.7	6	6	1.7	1.3	0.56	7	1.0	0.2	39.5	4.1
	28	32	309	157	16	39	23	5	6.8	6	5	1.8	1.3	0.57	7	1.0	0.2	39.9	4.2
	32	36	323	155	16	37	23	5	6.7	6	5	1.8	1.3	0.56	7	1.0	0.2	41.3	4.1
	36	40	314	160	17	39	23	5	6.9	6	6	1.8	1.4	0.55	7	1.1	0.2	40.3	4.2
	40	44	305	158	16	39	23	5	6.8	6	5	1.9	1.3	0.56	7	1.0	0.2	41.1	4.1
	44	48	305	160	17	41	24	5	6.6	6	5	1.8	1.2	0.57	7	1.1	0.2	40.3	4.2
	48	52	303	156	16	39	23	5	6.6	6	5	1.9	1.3	0.56	7	1.1	0.2	39.0	4.0
	52	56	301	144	15	36	21	5	6.2	5	5	1.7	1.2	0.52	7	1.0	0.2	36.2	3.9
	56	60	307	155	16	38	23	5	6.7	6	6	1.8	1.3	0.56	7	1.1	0.2	40.1	4.0
	60	64	317	152	15	37	22	5	6.6	5	5	1.7	1.2	0.55	7	1.1	0.2	39.4	3.9
	64	68	307	147	15	35	22	5	6.3	5	5	1.6	1.2	0.51	6	1.0	0.2	39.0	3.9
	68	72	314	145	15	35	21	5	6.1	5	5	1.7	1.2	0.50	7	1.0	0.2	38.1	3.9
	72	76	312	138	14	33	20	4	6.0	5	5	1.6	1.2	0.51	6	0.9	0.2	35.9	3.9
	72	76	316	140	14	34	20	4	6.0	5	5	1.6	1.2	0.52	6	1.0	0.2	36.6	3.8
	76	80	308	166	17	40	24	5	6.9	6	6	1.9	1.3	0.59	7	1.1	0.2	44.3	4.3
	80	84	293	167	18	41	25	5	7.0	6	6	1.9	1.4	0.59	7	1.1	0.2	42.2	4.3
	84	88	275	178	18	45	26	6	7.5	6	6	2.0	1.4	0.64	8	1.2	0.2	45.3	4.8
	88	92	298	158	17	39	23	5	6.6	6	6	1.9	1.3	0.56	7	1.1	0.2	40.0	4.2
	92	96	299	163	17	41	24	5	7.1	6	6	1.9	1.4	0.59	7	1.1	0.2	41.3	4.2
	96	100	288	167	17	42	25	5	7.0	6	6	1.9	1.4	0.58	7	1.1	0.2	41.3	4.3
	100	104	296	172	18	43	25	6	7.1	6	6	1.9	1.4	0.61	7	1.1	0.3	43.9	4.4
	104	108	289	163	17	41	24	5	6.9	6	6	1.8	1.3	0.58	7	1.1	0.2	41.5	4.1

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