23 July 2024

AR3 progresses Uranium strategy with Exploration License Application at Hamilton Creek

Securing strategic 200 km² tenure to explore Uranium Potential in the Callabonna Sub-basin

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Highlights:

- **Exploration License Application:** South Australian Exploration License Application (ELA) 2024/00045 has been submitted, adding ~200km² of prospective tenure targeting uranium mineralisation within the Callabonna Sub-basin**.**
- **Untested Uranium Potential:** Includes the Hamilton Creek Prospect, where strong indications of uranium mineralisation have been identified from historic borehole gamma logging worthy of follow-up.
- **Namba Formation Sediments:** Anomalous gamma responses in the upper Namba formation, a known uranium-bearing formation hosting the nearby Beverly uranium deposit located less than 50 Km from the Hamilton Creek Prospect.
- **Rapidly Growing Uranium Portfolio-** The Hamilton Creek ELA adds to the Company's uranium portfolio, now totaling ~3,400km² when combined with the Overland and Triggs Bore projects (*see AR3 ASX Announcements 7 May 2024 and 16 July 2024*).
- **Fast-tracked Exploration:** On-ground exploration will occur once the EL is granted, with planning for specific work programs already underway.
- Click here to watch a short video on this from our MD, Travis Beinke, or ask us any questions.

Australian Rare Earths (ASX: AR3) is pleased to announce the Company's application for tenure in South Australia, adding to the inventory of prospective ground targeting uranium mineralisation amenable to in-situ recovery mining. ELA 2024/00045 was lodged by AR3 in the prospective Callabonna Sub-basin to pursue an anomalous downhole gamma response identified in previous drilling.

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AR3 Managing Director and CEO, Travis Beinke, said:

"The submission of our South Australian Exploration License Application for the Hamilton Creek Prospect bolsters our prospective uranium tenure to 3,400 km^2. The Callabonna Sub-basin, with its strong indications of uranium mineralisation and historical data pointing to anomalous gamma responses in the Namba formation, represents an encouraging opportunity for AR3.

Our strategic expansion into this area is the latest step in our strategy of securing ground in South Australia that is prospective for uranium resources. The proximity to the Beverly uranium mine underscores the prospectivity of Hamilton Creek. We anticipate an early start toon-ground exploration once the license is granted, with planning for our work programs already underway.

We look forward to advancing our uranium exploration efforts and through it, delivering value to our shareholders."

The Hamilton Creek ELA is located approximately 165km northwest of Leigh Creek and covers an area of ~200km^2 within the Callabonna Sub-basin (Cenozoic) and is less than 50 km east of the Beverly and Four Mile uranium mines (Figure 1). The Callabonna Sub-basin and Frome Embayment (Mesozoic) contain South Australia's richest sandstone-hosted uranium deposits including the Beverly, Four Mile, and Honeymoon deposits and is arguably the most prospective region in Australia for sandstone hosted uranium[1]. The addition of this prospective tenure will increase AR3's uranium portfolio to ~3,400 km^2 when combined with the Overland project located in the Murray Basin and Triggs Bore Prospect, also within the Callabonna Sub-basin.

Sediment-hosted uranium mineralisation in the Callabonna Sub-basin is hosted by the Tertiary aged Namba and Eyre Formations (Beverley, Pepegoona and Four Mile East deposits), and Cretaceous aged Bulldog Shale time-equivalent sediments (Four Mile West). In the southeastern portion of the Callabonna Sub-basin, the Eyre Formation also hosts the Honeymoon and Gould's Dam deposits.

The upper Namba Formation is considered to be the main target horizon for the Hamilton Creek prospect based on the anomalous gamma intersected in previous drilling and proximity of the Beverly uranium mine, also hosted in the Namba Formation. A secondary target testing the underlying Eyre Formation will also be investigated.

Uraniferous source rocks in the region are well known and include the Mesoproterozoic rocks of the Moolawatana Suite and Mount Neill Granite which outcrop west of Hamilton Creek in the Northern Flinders ranges and below the Mesozoic cover in the region. Uranium source rocks shedding into the basing from the West and faults in the basement rocks underlying the tenure provides multiple potential pathways for ore bearing fluids.

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[1] Bernd H Michaelsen, Adrian J Fabris, John L Keeling, David M McKirdy, Laszlo F Katona and Les R Tucker 2016. Organic facies of the Frome Embayment and Callabonna Sub-basin: what and where are the uranium reductants? MESA Journal 81 October- December 2016. Geological Survey of South Australia, Department of State Development

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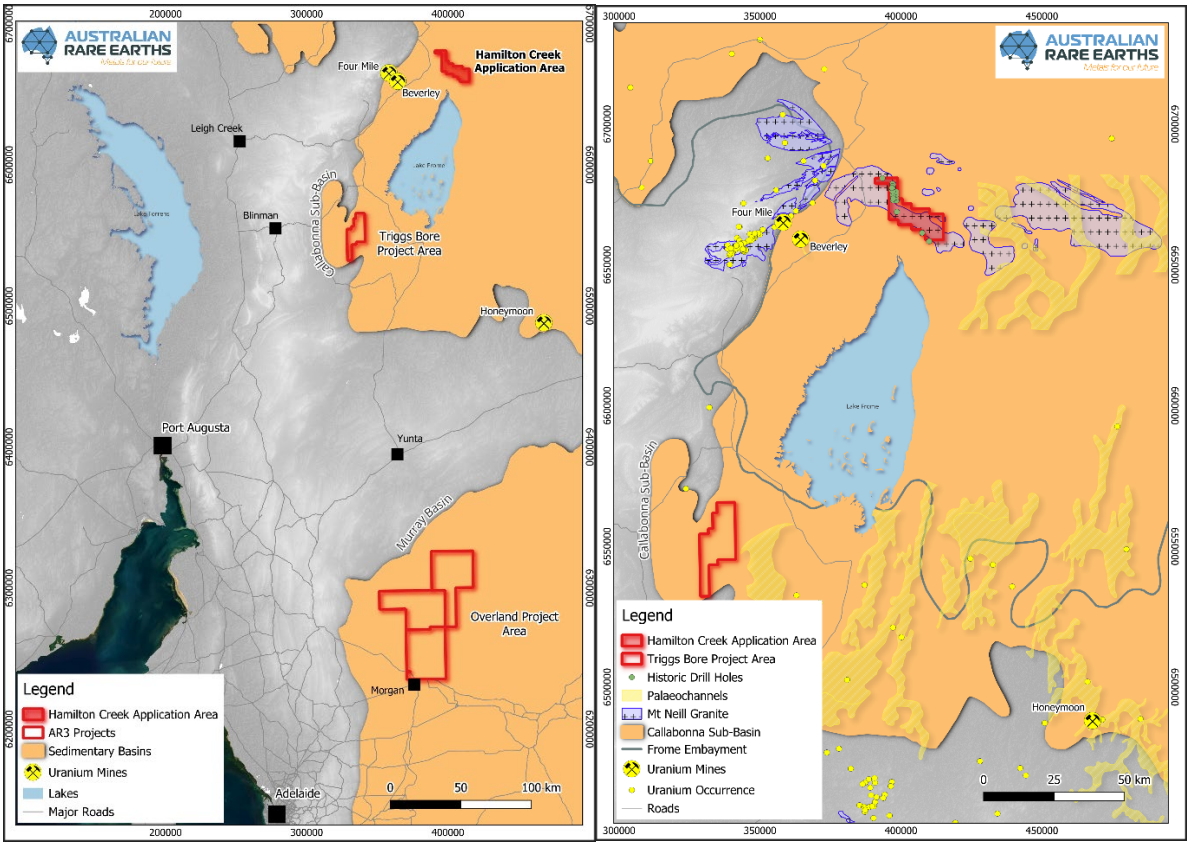

Figure 1- AR3's Hamilton Creek ELA relative to the Overland and Triggs Bore Projects (left) and regional geology (right).

Hamilton Creek Prospect

Minimal exploration drilling has been conducted over the Hamilton Creek region since the 1970s. Despite limited drilling, indications of anomalous uranium mineralisation has been noted from historic reporting. Drillholes LC2 and LC7 intersected an anomalous downhole gamma response within the Namba sequence, which hosts the nearby Beverly uranium deposit, at quite shallow depths ~70m (Figure 2).

Commentary from open file reports describing this anomalous gamma responses within drill holes LC2 an LC7 include;

- *Anomalous radioactivity was found in the "M" sand in drillholes LC 2 and LC 7. The radioactivity in LC 2 is associated with a very fine silty sandstone section. In LC 7 the radioactivity appears to be spikes or "rabbit ears" top and bottom of a sandstone unit after the uranium leaching fluids have passed through*[2].

- *The anomalously high uranium appears to be associated with lensing out of the "M" sand along the edge of a channel and was probably deposited due to the change in permeability*[2].

[2] Open File Envelope No. 1440, PROGRESS REPORTS FOR THE PERIOD 11/6/70 TO 10/6/71, Submitted by Mines Administration Pty Ltd, 1970.

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While initial reviews have identified indications of anomalous uranium, additional geological review of the Hamilton Creek prospect is ongoing and will continue during the coming months while the ELA progresses. Subsequent approvals and work programs will be undertaken once the tenement is granted, expected later in 2024.

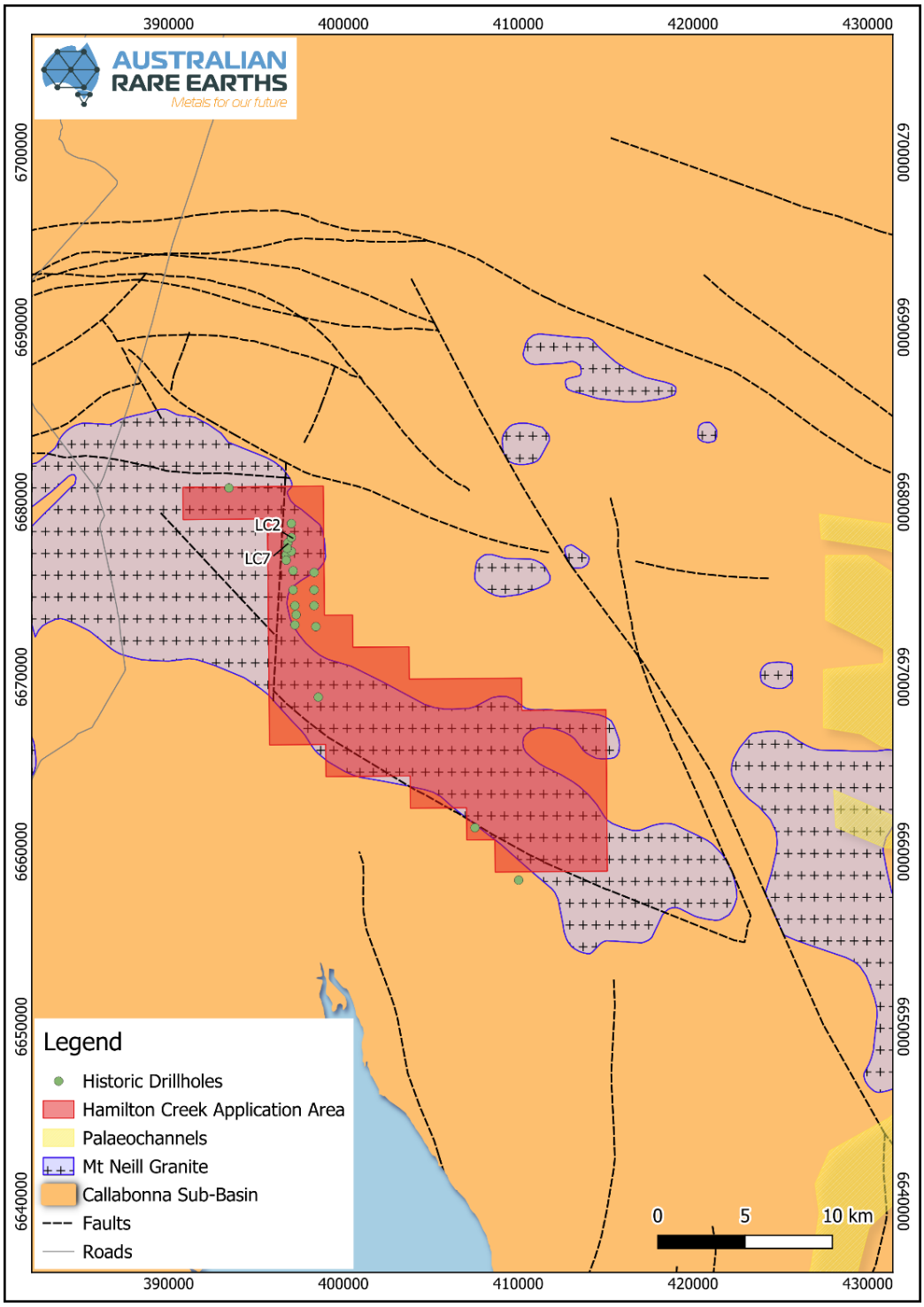

Figure 2- Local geology and select drillholes on Hamilton Creek ELA. Hole LC2 and LC7 contained anomalous downhole gamma response.

The announcement has been authorised for release by the Board of Australian Rare Earths Limited.

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Competent Person's Statement

The information in this report that relates to Exploration results is based on information compiled by Australian Rare Earths Limited and reviewed by Mr Rick Pobjoy who is the Chief Technical Officer of the Company and a member of the Australian Institute of Mining and Metallurgy (AusIMM). Mr Pobjoy has sufficient experience that is relevant to the style of mineralisation, the type of deposit under consideration and to the activities undertaken 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". Mr Pobjoy consents to the inclusion in this report of the matters based on this information in the form and context in which it appears.

About Australian Rare Earths Limited

Australian Rare Earths is committed to the timely exploration and development of its 100% owned, flagship Koppamurra Project, located in the new Koppamurra rare earths Province in southeastern South Australia and western Victoria. Koppamurra is a prospective ionic clay hosted rare earth deposit, uniquely rich in all the elements required in the manufacture of rare earth permanent magnets which are essential components in electric vehicles, wind turbines and domestic appliances. In addition, AR3 is actively reviewing other potential prospective areas which may also host uranium and ionic clay hosted rare earth deposits throughout Australia.

The Company is focused on executing a growth strategy that will ensure AR3 is positioned to become an independent and sustainable source of energy transition metals, playing a pivotal role in the global transition to a green economy.

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APPENDIX 1 - HISTORIC DRILL HOLE DETAILS

SARIG DH ID	Drill Hole ID	Easting GDA_2020	Northing GDA_2020	MGA zone	APPROXIMATE ELEVATION	DIP	EOH	Drill method	Operator	Date Completed	Target	SARIG Open File Envelope No.	Reference Notes
150185	COO 1	407523	6661380	54	23	-90	123	Rotary	Afmeco Pty Ltd.	24-Oct-80	Uranium	ENV03840	plan 3840-3
141549	EF02-013	410023	6658380	54	37	-90	4.5	Auger (Mechanised)	Aberfoyle Resources Ltd.	1-Jan-89	Heavy Minerals	ENV08013	App 1
153677	LC 2	396823	6677680	54	35	-90	289	Rotary	Mines Administration Pty Ltd.	1-Jan-70	Uranium	ENV01440	
N/A	LC7	396782	6677363	54	33	-90	85	Rotary	Mines Administration Pty Ltd.	20-Jul-70	Uranium	ENV01440	Approximat location based on historic drill reports
220448	LKDH-06-108	393451	6680809	54	43	-90	49	Rotary	Red Metal Ltd.	14-Jun-06	Uranium	ENV11224	On CD: PACE DPY2-11, Lake Blanche region Quaternary Palaeochannel/Paleolake margin calcrete-hosted or roll-front uranium mineral prospects. Final report.
137056	MINAD LC 1A	397293	6673559	54	30	-90	347.4700012	Rotary	Mines Administration Pty Ltd.	31-Oct-70	Uranium	ENV01440	Eyre Formation type section (now supplementary reference section- see FROME explanatory notes 1981)
301353	NM001	398564	6668846	54	24	-90	174	Rotary - Mud	Giralia Resources NL.	29-Jul-03	Uranium	ENV09455	
150414	WO 18	397123	6674980	54	31	-90	208	Rotary	Marathon Petroleum Australia Ltd.	30-May-80	Uranium	ENV05120	p.17-87
150415	WO 19	397123	6676080	54	31	-90	214	Rotary	Marathon Petroleum Australia Ltd.	30-May-80	Uranium	ENV05120	p.17-87
150416	WO 20	397023	6677180	54	31	-90	184	Rotary	Marathon Petroleum Australia Ltd.	31-May-80	Uranium	ENV05120	p.17-87
150417	WO 21	397023	6677980	54	34	-90	184	Rotary	Marathon Petroleum Australia Ltd.	1-Jun-80	Uranium	ENV05120	p.17-87
150418	WO 22	397023	6678780	54	35	-90	184	Rotary	Marathon Petroleum Australia Ltd.	2-Jun-80	Uranium	ENV05120	p.17-87
150419	WO 23	396723	6676980	54	33	-90	104	Rotary	Marathon Petroleum Australia Ltd.	2-Jun-80	Uranium	ENV05120	p.17-87
150420	WO 24	396723	6676680	54	32	-90	88	Rotary	Marathon Petroleum Australia Ltd.	2-Jun-80	Uranium	ENV05120	p.17-87
150421	WO 25	397223	6674080	54	28	-90	86	Rotary	Marathon Petroleum Australia Ltd.	2-Jun-80	Uranium	ENV05120	p.17-87
150422	WO 26	398323	6674980	54	30	-90	104	Rotary	Marathon Petroleum Australia Ltd.	3-Jun-80	Uranium	ENV05120	p.17-87
150423	WO 27	398323	6675980	54	31	-90	96	Rotary	Marathon Petroleum Australia Ltd.	3-Jun-80	Uranium	ENV05120	p.17-87
150424	WO 28	398323	6674080	54	27	-90	96	Rotary	Marathon Petroleum Australia Ltd.	3-Jun-80	Uranium	ENV05120	p.17-87
150425	WO 29	398423	6672880	54	26	-90	96	Rotary	Marathon Petroleum Australia Ltd.	3-Jun-80	Uranium	ENV05120	p.17-87
150426	WO 30	397223	6672980	54	29	-90	80	Rotary	Marathon Petroleum Australia Ltd.	3-Jun-80	Uranium	ENV05120	p.17-87

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APPENDIX 2 - JORC Table 1

Section 1 Sampling Techniques and Data		
Criteria	**Explanation**	**Comment**
Sampling techniques	*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. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g., 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g.,*	• *The WO Series holes were completed by Marathon Petroleum Australia Ltd in 1980 and have been geophysical logged with a composite probe for Gamma, S.P and Resistivity.* • *The LC Series holes were completed by Mines administration Pty Ltd in 1970 and have been geophysical logged upon completion with Resistivity, SP and natural gamma.* • *The NM series hole was completed by Giralia Resources in 2003 and has been geophysical logged with neutron, SP, point resistivity, sixteen-inch resistivity and gamma.* • *The COO series hole was completed by Afmeco Pty Ltd in 1980 and has been geophysical with Gamma and Neutron probes.* • *The EF series hole was completed by Aberfoyle Resource Ltd in 1989.* • *The LKDH series hole was completed by Red Metal Ltd in 2006.* • *Possible uranium mineralization was identified using the gamma logs, highlighting and correlating the anomalous gamma peaks between these holes.*

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	submarine nodules) may warrant disclosure of detailed information.	
Drilling techniques	*Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit, or other type, whether core is oriented and if so, by what method, etc).*	• *Drill type and details of the holes presented in this release are shown within "Appendix 1- Historical Drill hole Details" including reference to the original report.* • *All data is publicly available and sourced online from the South Australian Resources Information Gateway (https://map.sarig.sa.gov.au/) between July 11th and July 22nd 2024.*
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.* *Measures taken to maximise sample recovery and ensure representative nature of the samples.* *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 recovery information was reported in historical reports.*
Logging	*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.* *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* *The total length and percentage of the relevant intersections logged.*	• *All drillholes were logged qualitatively for major and minor lithologies by previous explorers.* • *No geotechnical logging was completed by previous explorers.* • *The detail of logging is not sufficient to support consideration of resource estimation, mining, or metallurgical studies.*

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Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all cores taken.* *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* *For all sample types, the nature, quality, and appropriateness of the sample preparation technique.* *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* *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.* *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• *No additional detail on gamma logging or sub sampling techniques is available from previous reports.*
Quality of assay data and laboratory tests	*The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* *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.*	• *Down hole gamma tools measure the gamma radiation emitting from radioactive decay daughter products. No U3O8 grades have been reported from down hole gamma in this report.*

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	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.	
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.* *The use of twinned holes.* *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* *Discuss any adjustment to assay data.*	• *All data is historical and open file data through the South Australian Dept of Energy and Mining (DEM), on the South Australian Resources Information Gateway (SARIG). Including:* • *Open File Envelope ENV05120, Marathon Petroleum Australia Ltd, 1983.* • *Open File Envelope ENV01440, Mines Administration Pty Ltd, 1970.* • *Open File Envelope ENV09455, Giralia Resources, 2003.* • *Open File Envelope ENV01440, Red Metal, 2006.* • *Open File Envelope ENV03840, Afmeco Pty Ltd, 1980.* • *Open File Envelope ENV08013, Aberforyle Resources Pty Ltd, 1989.* • *A complete list of all reports included in Appendix 1.* • *No Significant intersections were reported in the drillholes within this release.*
Location of data points	*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.* *Specification of the grid system used.* *Quality and adequacy of topographic control.*	• *All maps are in GDA2020/MGA zone 54.* • *Locations of historical drill holes reported in this ASX release are detailed in Appendix 1 and maps/figures within this release.*
Data spacing and distribution	*Data spacing for reporting of Exploration Results.* *Whether the data spacing, and distribution is sufficient to establish the*	• *Locations of historical drill holes reported in this ASX release are detailed in Appendix 1.* • *No geological or grade continuity estimations are being determined from*

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	degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. Whether sample compositing has been applied.	*the historical data.*
Orientation of data in relation to geological structure	*Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* *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.*	• *All drill holes were drilled vertically as detailed in Appendix 1 of this release.*
Sample security	*The measures taken to ensure sample security.*	• *Australian Rare Earths was not present during the handling of the samples and cannot verify sample security. All sample information is from historical reports detailed in Appendix 1.*
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	• *No Audits have been carried out.*

Section 2 Reporting of Exploration Results		
Criteria	**Explanation**	**Comment**
Mineral tenement and land tenure status	*Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title*	• *Australian Rare Earths Hamilton Creek project is comprised of ELA2024/00045.* • *ELA2024/00045 is under application by WRDBD Developments Pty Ltd, a wholly owned subsidiary of Australian Rare Earths.*

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	interests, historical sites, wilderness or national park and environmental settings. *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 ELA covers an area of approximately 200km2.* • *There are no Conservation Parks or Regional Reserves in the Application areas.* • *Registered Native Title Determination SAD6001/1998 overlaps ELA 2024/00045.* • *Registered Native Title Determination Application NSD525/2021 overlaps ELA 2024/00045.*
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	• *Exploration activities by other exploration companies extends back to the 1970's.* • *Historically the area has been explored for Uranium, Heavy Minerals and Water.* • *A detailed list of historic exploration is provided in Appendix 1.*
Geology	*Deposit type, geological setting and style of mineralisation.*	• *The Hamilton Creek project is targeting Paleochannel Uranium within the Eyre Formation sediments of the Callabonna Sub-Basin.* • *Sedimentary hosted uranium deposits occur in medium to coarse-grained sedimentary sequences deposited in a continental fluvial or marginal marine sedimentary environment. Impermeable shale/mudstone units are interbedded in the sedimentary sequence and often occur immediately above and below the mineralised sediments. Uranium is precipitated under reducing conditions caused by a variety of reducing agents within the permeable sediments including carbonaceous material (detrital plant debris, amorphous humate, marine algae), sulphides (pyrite, H2S), and hydrocarbons.* • *Sediment-hosted uranium mineralisation in the*

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		Frome Embayment is hosted by the Tertiary aged Namba and Eyre Formations (Beverley, Pepegoona and Four Mile East deposits), and Cretaceous aged Bulldog Shale time-equivalent sediments (Four Mile West). In the southeastern Frome Embayment, the Eyre Formation also hosts the Honeymoon and Goulds Dam deposits. The Eyre Formation is considered the main target horizon.
Drill hole Information	*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:* *- easting and northing of the drill hole collar* *- elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* *- dip and azimuth of the hole* *- down hole length and interception depth* *- hole length.* *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.*	• *The material information for drill holes relating to this report are contained within Appendix 1.*
Data aggregation methods	*In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be*	• *No data aggregation methods were used in reporting of this release.*

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	stated. *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.* *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.* *If the geometry of the mineralisation with respect to the drill hole 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 (eg 'down hole length, true width not known').*	• *All down hole lengths of geological intervals are interpreted to be true widths as the geology in the region is relatively flat lying and the holes are vertical.* • *No mineralization/assays have been reported downhole.*
Diagrams	*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.*	• *Diagrams are included in the body of this release.*
Balanced reporting	*Where comprehensive reporting of all Exploration Results is not practicable, representative*	• *This release contains all drilling results that are consistent with the JORC guidelines. Where data may have been excluded, it is considered not material.*

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	reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	
Other substantive exploration data	*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.*	• *All known relevant exploration data has been reported in this release.*
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• *Additional work will consist of (but not limited to) reviewing/reprocessing historical geophysical and geological data, spectral surveys for pathfinder elements related to U mineralization and review of available drill cores at the state core library.* • *Field work will be contingent on successful granting of the Hamilton Creek ELA. Once granted, field work will consist of (but not limited to) drilling, targeting the Namba and Eyre Formations for Uranium mineralization.*