

# **Exceptional REE Recoveries Continue at Morgan's Creek**

#### **HIGHLIGHTS**

- A second batch of samples enriched in high-value rare earth elements (REEs1) from Morgan's Creek have been analysed to determine the concentration of readily soluble REEs
- A high concentration of readily soluble, weakly bound REEs is a key feature of Ionic
  Adsorption Clay (IAC) REE deposits and allows for a simple metallurgical flow sheet,
  which is a critical factor in determining the potential commercial viability of REE
  deposits
- The second batch of results have increased the average recoveries across the weathered and fresh rock zones, with no change to the average recovery of the clay zone (first batch results announced 10 May 2022)
- In the weathered zone, average recoveries<sup>5</sup> of:
  - o total rare earth element oxide (TREO2) has increased from 68% TREO to 72% TREO
  - high-value magnetic rare earth element oxides (MREO<sup>3</sup>: Nd + Pr + Dy + Tb) has increased from 70% MREO to 75% MREO
  - heavy rare earth element oxide (HREO6) has increased from 53% HREO to 62% HREO
- Average recoveries in the clay zone remain unchanged at 85% TREO and 93% MREO
- Fresh rock REE recoveries have also increased, and indicate a high REE solubility of 47% of the TREO and 50% of the MREO in the fresh rock zone
- Until now, Morgans Creek has been the focus of copper exploration
- Taruga is now targeting a series of newly identified clay-hosted REE targets across
   Morgans Creek in the first ever REE-focused exploration at the project
- Taruga recently received a \$650,000 Accelerated Discovery Initiative<sup>8</sup> grant from the South Australian Government for REE and copper exploration at the Mt Craig Project
- The Company remains well funded with existing capital to continue exploration activities including the fully budgeted drilling, regional exploration and metallurgical testwork

CEO Thomas Line commented: "Our ongoing metallurgical assessment continues to provide strong encouragement for the potential of the REEs at Morgan's Creek to be susceptible to a simple, low-cost process flow sheet. We have now analysed all significant intercepts which have indicated high average recoveries in the clay and weathered zones. The technical team have been busy defining a series of new clay-hosted REE targets at Morgan's Creek and we are currently performing auger drilling across these targets to assist in refining drill targets. We are excited to progress to Aircore and RC drilling toward the end of July, in what will be the first ever targeted REE exploration program at the project."

and dates)

Non-Executive Director



Significant intercepts from Taruga's 2021 drilling at Morgan's Creek (previously reported) include:

- 6m @ 1,210 ppm TREO from 9m (MCRC048)
- 22m @ 1,050 ppm TREO from 27m, including 10m @ 1,940ppm TREO (MCRC048)
- 31m @ 487ppm TREO from 21m, including 3m @ 1,996ppm TREO (MCRC010)
- 3m @ 1,715ppm TREO from 39m, including 2m @ 2,456ppm TREO (MCRC024)
- 13m @ 505ppm TREO from 31m, including **3.15m @1,172ppm TREO** from 31m (MCDD004)
- 7m @ 560ppm TREO from 2m, including 1m @ 1,124ppm TREO (MCRC026)
- 5m @ 779ppm TREO from 28m, including **2m @ 1,547ppm TREO** (MCRC015)
- 5m @ 500ppm TREO from 21m, including 2m @ 871ppm TREO (MCRC015)
- 6m @505ppm TREO from 19m, including 3m @ 820ppm TREO (MCRC006)
- 4m @ 953ppm TREO from 1m (MCRC013)
- 17m @ 410ppm TREO from surface, including 3m @ 945ppm TREO (MCRC050)

<sup>1</sup>REE refers to the 15 rare earth elements (Ce, La, Lu, Nd, Pr, Sm, Dy, Er, Eu, Gd, Ho, Tb, Tm, Yb, Y)

<sup>2</sup>TREO refers to the sum of all 15 REEs in their respective oxide equivalent (see JORC table for conversion factors)

 $^3$ MREO refers to the 4 high-value magnetic rare earth oxides (Nd $_2$ O $_3$  Pr $_2$ O $_3$  + Dy $_2$ O $_3$  + Tb $_2$ O $_3$ ) used in renewable technologies and permanent magnets

<sup>4</sup>LREO refers to the light rare earth oxides (Ce, La, Nd, Pr, Sm)

<sup>5</sup>Recovery refers to the % extraction of soluble REEs as indicated by the modified ("weak") aqua regia analytical analysis relative to the Fusion/Full Digest analysis obtained by dividing the weak aqua regia results by the Fusion/Full Digest results for a particular sample.

<sup>6</sup> HREO heavy rare earth element oxides (Eu, Gd + Tb + Dy + Ho + Er + Tm + Yb + Lu + Y)

<sup>7</sup> CREO critical rare earth element oxides (Nd + Tb + Dy + Eu + Y)

<sup>8</sup>Announced on the 16<sup>th</sup> June 2022

Taruga Minerals Limited (ASX: **TAR**, **Taruga** or the **Company**) is pleased to provide an update on the results of analytical testwork completed on drill samples from the 2021 RC drilling program at Morgan's Creek, within the Mt Craig Project (MCP). The positive testwork has indicated there is a high concentration of readily soluble REEs from recent drill samples at Morgan's Creek, a critical factor in determining the economic viability of REE deposits. The results of the testwork are summarised in **Table 1**.

Morgan's Creek has been the focus of copper exploration until this point, however significant REE mineralisation has been defined over an area of approximately 6km long x 2km wide, and remains open in all directions. The technical team have defined a series of new clay-hosted REE targets using the knowledge obtained from recent drilling along with new geophysical datasets and mapping. Soils geochemistry and auger profiles are being completed over the priority target areas now to assist with defining final Aircore and RC drill targets. The company is currently planning to commence Aircore/RC drilling at the end of July/Early August.



**Table 1**. Average REE oxide Recoveries for various lithologies. Note the clay content of vairous categories decreases from "clay", to "fresh": where "clay" has the highest clay content, "fresh" has the lowest clay content and "weathered" contains an intermediate clay content. Clay minerals are derived from both weathering and alteration.

	Method	LREO	LREO	LREO	LREO	LREO	HREO														
Lithology	Recovery	La2O3	Ce2O3	Sm2O3	Pr2O3	Nd2O3	Tb2O3	Dy2O3	Eu2O3	Y2O3	Gd2O3	Ho2O3	Er2O3	Tm2O3	Yb2O3	Lu2O3		Group Averages			
					MREO*	MREO*	MREO*	MREO*													
						CREO*	CREO*	CREO*	CREO*	CREO*							TREO	LREO	HREO	MREO	CREO
Clay	Fusion/Full Digest	53.1	147.8	24.1	21.1	102.0	3.7	22.4	5.2	121.0	29.1	4.3	12.9	1.6	10.1	1.5	560	348	212	149	254
Clay	WAR	51.0	142.7	24.0	20.7	100.8	3.0	14.0	5.1	75.9	21.5	2.6	6.9	0.9	5.8	0.8	476	340	137	139	199
Clay	Recovery	96%	97%	100%	98%	99%	82%	63%	98%	63%	74%	62%	53%	56%	58%	55%	85%	98%	64%	93%	78%
Weathered	Fusion/Full Digest	79.4	200.0	18.5	21.8	87.6	1.9	10.0	3.4	58.8	14.5	1.8	5.0	0.6	4.6	0.6	509	407	101	121	162
Weathered	WAR	44.9	162.1	13.8	15.6	67.6	1.5	6.9	2.7	33.6	11.1	1.2	3.1	0.4	2.5	0.4	367	304	63	92	112
Weathered	Recovery	57%	81%	75%	72%	77%	76%	68%	79%	57%	77%	67%	62%	58%	54%	100%	72%	75%	62%	75%	69%
Fresh	Fusion/Full Digest	93.8	192.8	13.7	22.1	77.6	1.3	6.8	2.3	35.2	11.1	1.2	3.7	0.3	3.3	0.3	465	400	65	108	123
Fresh	WAR	45.3	93.3	6.0	10.7	40.0	0.6	2.4	1.0	10.9	4.3	0.4	1.1	0.1	1.0	0.1	217 195 22 54		55		
Fresh	Recovery	48%	48%	44%	48%	52%	41%	35%	43%	31%	39%	36%	30%	43%	29%	42%	47%	49%	33%	50%	45%

<sup>&</sup>quot;Fusion/Full Digest" - Lithium Borate Fusion analysis technique, Full Digest – mixed acid full digest analysis technique

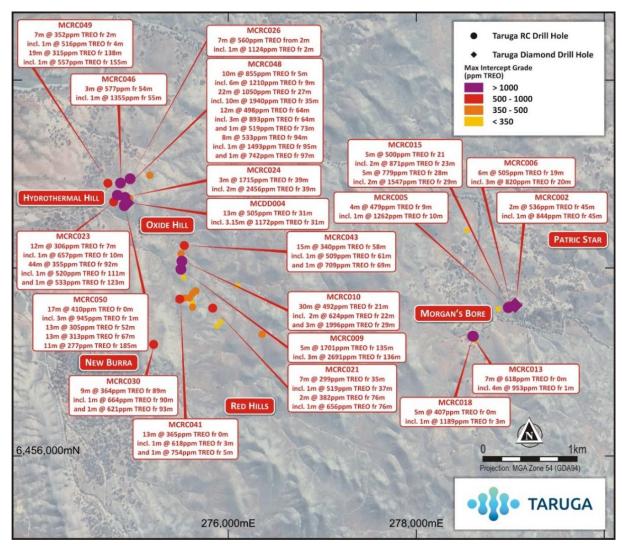
<sup>&</sup>quot;WAR" - Modified (weak) Aqua Regia analysis technique

Recovery - the proportion of Fusion/Full Digest result extracted by WAR technique

All grade values are reported in ppm. All recoveries are reported as %.

Calculated from results over 250 ppm TREO (Fusion/Full Digest) cut-off.





**Figure 1**. REE Drill results from Taruga's 2021 drilling at Morgan's Creek with collars colour coded by maximum TREO grade (purple represents >1000ppm TREO).

#### **Technical Discussion**

lonic Adsorption Clay (IAC) REE deposits are an important source of heavy, critical and magnetic REEs. They typically occur in tropical high rainfall environments under thick laterite soils in China, Africa, Vietnam and Myanmar; however, IAC REE deposits are now being identified in basin settings in South Australia and Western Australia. The REEs are typically leached from underlying source rocks by groundwater and are weakly adsorbed onto clay minerals near the intensely weathered zones. The REEs are readily soluble using a weak acid and therefore can be extracted cheaply, using a simple metallurgical flowsheet. USGS reports that Ionic Adsorption Clay REE deposit grades are typically between 300 to 2000ppm. According to USGS, the key factors behind their economic viability are i) acid solubility in weak acid; ii) enrichment in high-value REEs (such as heavy REEs and Magnetic REEs).



Magnetic rare earths are particularly important for REE permanent magnetics, and renewable green technologies including wind turbines. Mid and heavy rare earths are especially crucial to modern defence technologies such as radar, sonar systems, and precision-guided weapons.

REE mineralisation at Morgan's Creek is hosted primarily in weathered zones near the surface. The three reported 'zones' are "clay", "weathered" and "fresh" which relate primarily to the amount of clay present in the zone. Where "clay" has the highest clay content, "fresh" has the lowest clay content, and "weathered" contains an intermediate clay content dependent upon the degree of weathering and alteration.

The REE enrichment may be related to the large skarn alteration system identified in the 2021 drilling program, which is also a source of primary copper mineralisation. Supergene processes may be responsible for Ionic Adsorption Clay REE deposits in the upper levels of the weathering profile.

#### **Analytical Testwork**

The testwork was implemented to assess if the rare earth elements present in previously identified anomalous assay intercepts were readily soluble. Samples selected for re-assay included a broad range of rock types and grade ranges, including samples from the full length of core and RC holes. The inclusion of full hole analysis allowed for detailed analytical profiles of the clay, saprock and fresh rock REE conditions to be evaluated. The initial samples were analysed by both lithium borate fusion (fusion) and a modified ("weak") aqua regia digest (AR) (WAR) technique. Additional samples were analysed by the modified ("weak") aqua regia digest (AR) (WAR) technique and equated to the original mixed acid full digest results. 421 additional samples from RC drill samples were analysed in a second round of analysis covering all known REE intercepts from prior drilling. Between previously reported results and recent results included in this report a total of 772 samples were taken from laboratory stored pulps including 614 RC and 158 Diamond Core drill samples.

The fusion and full digest analysis techniques provide a complete dissolution of the minerals analysed providing a base record of elemental concentrations. The fusion results were statistically compared to original mixed acid full digest results for a comparison of accuracy. No statistically significant difference was found between original mixed acid digest results and re-assayed lithium borate fusion results and no notable change to the calculated percentage recovery by equating either analysis technique. The WAR technique provided a method for assessing readily soluble elements using a standard lab acid mix in a defined volume ratio of HNO3 and HCl acid that is bulked up in water then presented to instrumentation.

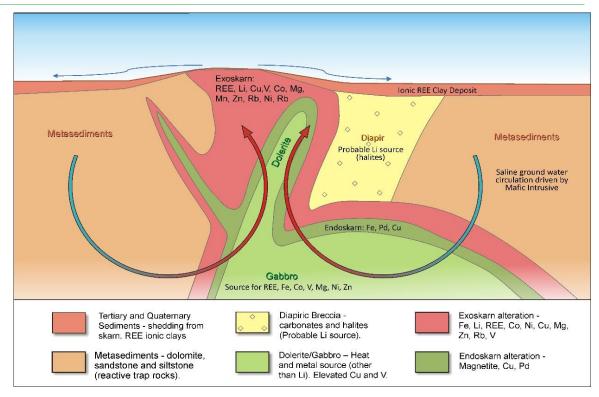
The comparison between fusion/full digest and WAR results as an indicative recovery provides an indication of readily soluble rare earth elements, with recovery being the percentage of the WAR extracted result compared to the fusion result. The promising initial analysis and evaluation of indicative recoveries in clay and weathered material in particular provides support for continued exploration and further metallurgical assessment.



### **Exploration plan**

Taruga are presently undertaking our first ever targeted REE exploration program at Morgan's Creek. The program will entail the following:

- Target generation based on new geophysical datasets, mapping and drill data review (complete)
- Soils geochemistry and auger drilling profiles over priority targets to refine targets (underway)
- Aircore and RC drilling (commencing late July 2022)



**Figure 2.** Developing geological model for the skarn system at Morgans Creek, showing the interaction of the maficultramafic intrusions with the diapiric breccias and surrounding metasediments, along with the deposition of IAC REEs.

#### **About MCP**

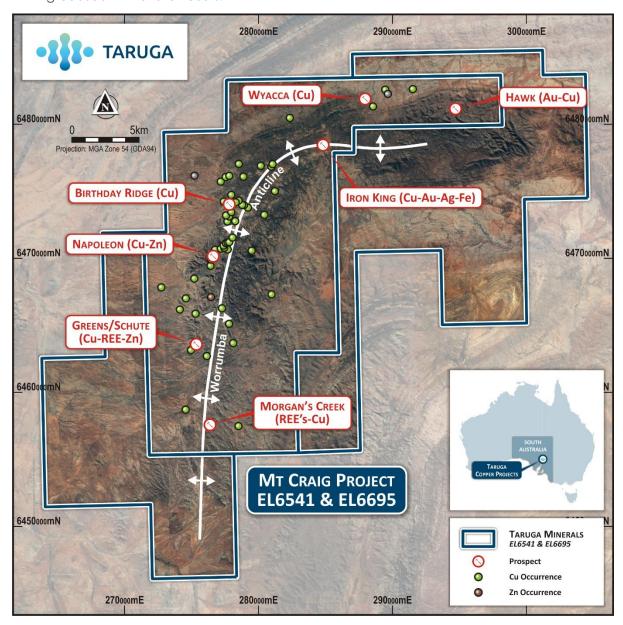
The Mt Craig Project (MCP) is prospective for a range of mineralisation styles, including sediment-hosted copper, REEs and Polymetallic Skarn. Prospective Mineralisation Styles at MCCP:

- Central African Copperbelt style sediment hosted Cu
- Magnesian Skarn (Cu-Co-PGE)
- Ionic Adsorption Clay (IAC) style REEs
- MVT style Cu-Pb-Zn
- Kipushi style (Cu-Zn-Pb-Ag-Au)

The MCP is situated within the Adelaide Fold Belt (**AFB**), and lies at the intersection of the G2 and G8 structural corridors (lineaments). The G2 and G8 lineaments mapped by O'Driscoll led to the discovery of Olympic Dam, and reflect the deep lithospheric structure of Australia, hosting the majority of South Australia's major base metal deposits.



The AFB has hosted over 800 historical copper mines or workings, and multiple polymetallic mines since the 1840's. Copper-gold associations are common within the AFB, with many of the old copper mining ventures not recognising the presence of gold and other metals such as REEs which were not assayed for. Modern exploration has continued to uncover significant large-scale, polymetallic, base and precious metal potential around historical mining regions within the AFB, which have undergone limited exploration and development since initial mining ceased in the late 1800's.



**Figure 3.** MCP Project outline showing priority exploration targets, historical Cu and In mineral occurrences & mines, and the main structural feature being the Worrumba Anticline.



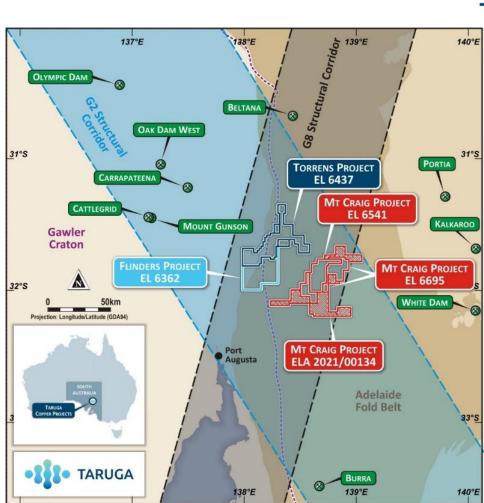


Figure 4. Tenement Map showing Taruga's South Australian projects.

This announcement was approved by the Board of Taruga Minerals Limited.

#### For more information contact:

Thomas Line

CEO

+61 8 9486 4036

#### Competent person's statement

The information in this report that relates to exploration results is based on, and fairly represents information and supporting documentation prepared by Mr Brent Laws, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Laws is the Exploration Manager of Taruga Minerals Limited. Mr Laws has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resource and Ore Reserves". Mr Laws consents to the inclusion in this report of the matters based on their information in the form and context in which it appears.

#### Forward looking statements

This announcement contains certain forward-looking statements and comments about future events, including the Company's expectations about the proposed transaction, the proposed tenements and the performance of its businesses. Forward looking statements can generally be identified by the use of forward-looking words such as 'expect', 'anticipate', 'likely', 'intend', 'should', 'could', 'may', 'predict', 'plan', 'propose', 'will', 'believe', 'forecast', 'estimate', 'target' and other similar expressions within the meaning of securities laws of applicable jurisdictions. Indications of, and guidance on, future earnings or financial position or performance are also forward-looking statements.



Forward looking statements involve inherent risks and uncertainties, both general and specific, and there is a risk that such predictions, forecasts, projections and other forward-looking statements will not be achieved. Forward looking statements are provided as a general guide only and should not be relied on as an indication or guarantee of future performance. Forward looking statements involve known and unknown risks, uncertainty and other factors which can cause the Company's actual results to differ materially from the plans, objectives, expectations, estimates and intentions expressed in such forward-looking statements and many of these factors are outside the control of the Company. As such, undue reliance should not be placed on any forward-looking statement. Past performance is not necessarily a guide to future performance and no representation or warranty is made by any person as to the likelihood of achievement or reasonableness of any forward-looking statements, forecast financial information or other forecast. Nothing contained in this announcement nor any information made available to you is, or shall be relied upon as, a promise, representation, warranty or guarantee as to the past, present or the future performance of the Company.

Except as required by law or the ASX Listing Rules, the Company assumes no obligation to provide any additional or updated information or to update any forward-looking statements, whether as a result of new information, future events or results, or otherwise.

\*refer to announcements dated 10/03/2022 "polymetallic drill results at Hydrothermal Hill Skarn; and 07/02/2022 "partial drill results from MCCP"

**Table 2.** Relevant Commodity Prices. All precious and base metal prices are taken from tradingeconomics.com. All REE and battery mineral prices are taken from Asianmetal.com under a premium subscription.

		Prec	ious Metals			
Metal	USD/t	USD/Kg	USD/g	Comment		
Gold	\$63,340,000	\$63,340	\$63.34	\$1,970/Oz (05/03/22)		
Palladium	\$94,460,000	\$94,460	\$94.46	\$3,000/Oz (05/03/22)		
Platinum	\$36,000,000	\$36,000	\$36.00	\$1120/ Oz (05/03/22)		
Silver	\$800,000	\$800	\$0.80	\$25/Oz (05/03/22)		
			REEs			
Metal	USD/t	USD/Kg	USD/g	Comment		
Cerium (Ce)	\$5,000	\$5	\$0.005			
Samarium (Sm)	\$5,000	\$5	\$0.005			
Lanthanum (La)	\$7,000	\$7	\$0.007			
Yttrium (Y)	\$15,000	\$15	\$0.015			
Europium (Eu)	\$32,000	\$32	\$0.032			
Erbium (Er)	\$65,000	\$65	\$0.065	FOB China Oxide Prices 99%min		
Gadolinium (Gd)	\$108,000	\$108	\$0.108	(02/03/22). Note: Scandium is not		
Ytterbium (Yb)	\$118,000	\$118	\$0.118	included in our REE calculations. <b>High</b> -		
Praseodymium (Pr)	\$170,000	\$170	\$0.170	value magnetic REEs (MREO's)		
Neodymium (Nd)	\$190,000	\$190	\$0.190	highlighted in bold.		
Holmium (Ho)	\$307,000	\$307	\$0.307			
Dysprosium (Dy)	\$490,000	\$490	\$0.490			
Lutetium (Lu)	\$832,000	\$832	\$0.832			
Scandium (Sc)*	\$886,000	\$886	\$0.886			
Terbium (Tb)	\$2,400,000	\$2,400	\$2.400			
		Batte	ery Minerals			
Metal	USD/t	USD/Kg	USD/g	Comment		
Lithium (LCE)	\$65,000.00	\$65.00	\$0.065	Lithium Carbonate 99.5% min Delivered US (05/03/22)		
Cobalt	\$36,000.00	\$36.00	\$0.036	Cobalt Metal 99.8%min In warehouse Baltimore (05/03/22)		
Vanadium (V2O5)	\$18,080.00	\$18.08	\$0.018	Vanadium Pentoxide Flake 98%min CIF China V2O5 (05/03/22)		
	7.1,110,00	<u> </u>	se Metals			
Metal	USD/t	USD/Kg	USD/g	Comment		
Copper	\$10,800.00	\$10.80	\$0.011	Comment		
Zinc	\$4,123.00	\$4.12	\$0.004	05/03/22		
Nickel	\$27,582.00	\$27.58	\$0.028			



### **Appendix**

Table 3. Drill collar data table.

Prospect	Hole ID	Hole Type	EOH Hole Depth	Grid	х	Υ	Azi- muth	Dip
Morgan's Creek	MCDD001	DD	74.1	GDA94/WGS54	279046	6457603	220	-60
Morgan's Creek	MCDD002	DD	7.2	GDA94/WGS54	275504	6458101	180	-60
Morgan's Creek	MCDD003	DD	186.65	GDA94/WGS54	275502	6458101	180	-60
Morgan's Creek	MCDD004	DD	150.2	GDA94/WGS54	274924	6458698	210	-60
Morgan's Creek	MCRC023	RC	156	GDA94/WGS54	274784	6458708	89	-60
Morgan's Creek	MCRC024	RC	150	GDA94/WGS54	274904	6458757	93	-60
Morgan's Creek	MCRC025	RC	84	GDA94/WGS54	274957	6458746	91	-60
Morgan's Creek	MCRC026	RC	180	GDA94/WGS54	274959	6458955	0	-90
Morgan's Creek	MCRC027	RC	36	GDA94/WGS54	274857	6458910	0	-90
Morgan's Creek	MCRC028	RC	252	GDA94/WGS54	274869	6457519	62	-60
Morgan's Creek	MCRC029	RC	240	GDA94/WGS54	274897	6457170	75	-60
Morgan's Creek	MCRC030	RC	324	GDA94/WGS54	275209	6457191	270	-60
Morgan's Creek	MCRC031	RC	198	GDA94/WGS54	275884	6457384	104	-60
Morgan's Creek	MCRC032	RC	60	GDA94/WGS54	275922	6457430	88	-60
Morgan's Creek	MCRC033	RC	186	GDA94/WGS54	277368	6456851	0	-90
Morgan's Creek	MCRC034	RC	85	GDA94/WGS54	275623	6457588	359	-60
Morgan's Creek	MCRC035	RC	84	GDA94/WGS54	275624	6457629	0	-60
Morgan's Creek	MCRC036	RC	102	GDA94/WGS54	275590	6457687	73	-55
Morgan's Creek	MCRC037	RC	90	GDA94/WGS54	275625	6457735	70	-55
Morgan's Creek	MCRC038	RC	138	GDA94/WGS54	276103	6457813	0	-90
Morgan's Creek	MCRC039	RC	78	GDA94/WGS54	275659	6457760	70	-55
Morgan's Creek	MCRC040	RC	108	GDA94/WGS54	275539	6457684	72	-55
Morgan's Creek	MCRC041	RC	132	GDA94/WGS54	275487	6457674	70	-55
Morgan's Creek	MCRC042	RC	90	GDA94/WGS54	275501	6458156	179	-60
Morgan's Creek	MCRC043	RC	132	GDA94/WGS54	275535	6458243	188	-55
Morgan's Creek	MCRC044	RC	126	GDA94/WGS54	275535	6458245	0	-90
Morgan's Creek	MCRC045	RC	204	GDA94/WGS54	275527	6457901	182	-60
Morgan's Creek	MCRC046	RC	182	GDA94/WGS54	274856	6458910	0	-90
Morgan's Creek	MCRC047	RC	209	GDA94/WGS54	274954	6458745	212	-65
Morgan's Creek	MCRC048	RC	234	GDA94/WGS54	274823	6458780	92	-60
Morgan's Creek	MCRC049	RC	228	GDA94/WGS54	274723	6458905	90	-60
Morgan's Creek	MCRC050	RC	270	GDA94/WGS54	274896	6458667	198	-75



## JORC Code, 2012 Edition – Table 1 report template

## Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Critoria	IORC Code evaluation	Commandant
Criteria	JORC Code explanation	Commentary
Sampling techniques	<ul> <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> <li>389 additional samples from RC drill sampling were analysed in a second round of analysis and are included in the data summarised in this report. Additional samples cover known REE intercepts from prior drilling not previously analysed for potential recovery. A total of 772 RC samples were taken from laboratory stored pulps including 614 RC and 158 Diamond Core drill samples. Re-assayed samples are a direct comparison with original samples analysed. No sample compositing was carried out.</li> <li>Samples selected for re-assay included a broad range of rock types and grade ranges including full holes in order to assess if the rare earth elements (REE) present are readily soluble at a weaker aqua regia acid mix and to create an analytical profile of the weathering and oxidation conditions downhole.</li> <li>RC sampling was completed at 1m intervals with sample returned through an on-board static cone splitter generating a bulk reference sample and 2 representative A and B samples for analysis and QAQC. A and B sample weights were on average &gt;3kg. Each metre was geologically logged including a pXRF and magsus reading.</li> <li>HQ Diamond Core is sampled after geological and structural logging. Core is cut to ½ core through a standardised procedure that includes consistent sampling of the same side of the cut core. Core is sampled to lithological, structural and mineralised boundaries with sample for representative analysis. Intervals selected for laboratory analysis are identified through visual logging by a geologist and utilises a handheld XRF to confirm the presence of mineralisaton. Each geological interval identified was logged separately including selective pXRF readings to support mineral identification or regular 5cm spaced readings for indicative mineralisation trends over select intervals.</li> <li>Samples were originally analysed at Bureau Veritas, Adelaide for broad suite multi-element analysis using mixed 4-acid full digest ICP-MS. Gold and PGE analysis was by Fire Assay ICP-OES.</li> </ul>



		i Alto di A
Criteria	JORC Code explanation	Commentary
		<ul> <li>The re-assayed samples were also analysed at Bureau Veritas, Adelaide by lithium borate fusion (first batch) and a modified ("weak" or otherwise reduced acid availability) aqua regia technique (both batches). Both techniques are covered under available standard Bureau Veritas laboratory procedures.</li> </ul>
Drilling techniques	<ul> <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> <li>Drilling methods included RC drilling with a 5 ½" diameter bit with sample returned through a cone splitter generating a bulk reference sample and 2 representative A and B samples for analysis and QAQC.</li> <li>The drill rig used was a Schramm 650 with onboard air and auxillary compressor. The drill rig was capable of drilling to a maximum depth of 350m.</li> <li>Drilling methods included Diamond Core HQ size drilled from surface with a nominal 63.5mm core diameter.</li> <li>Where possible core was orientated to allow for structural measurements.</li> <li>Downhole surveys were taken at 6m (collar), 30m and every subsequent 30m drilled with a final survey at end of hole depth.</li> </ul>
Drill sample recovery	<ul> <li>Method of recording and assessing core and chip sample recoveries and results asses</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> <li>RC drill sample was collected as 1 metre intervals downhole from a cone splitter in pre-numbered sample bags. A bulk sample was used for logging rock type and field recordings whilst 2 representative samples of 3-4kg each were collected simultaneously for primary analysis and QAQC as well as secondary B sample reference. Sample validity included comparison of sample weights to ensure sample recovery was within acceptable limits, with intervals of poor recovery and possible causes such as groundwater intercepts being recorded. The cone splitter was regularly cleaned and assessed to minimise potential sample contamination.</li> <li>Core recovery was assessed through measurement of core in relation drilled depths and core blocks. Core recoveries were above acceptable industry standard limitations with &gt;98% core recovery.</li> <li>No sample quality issues are expected.</li> </ul>
Logging	<ul> <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> <li>All RC drill chips were field logged per metre and representative reference material retained in chip trays which were photographed for a digital reference. Subsequent review of chips and field logging was conducted to ensure records are consistent and accurate. Each metre included a magsus reading from the bulk sample bag and a corresponding pXRF reading to guide drilling and sampling decisions.</li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul> <li>Core drill holes were geologically logged by industry standard methods, including lithology, structure, alteration and mineralisation. All core trays were photographed wet and dry.</li> <li>The logging is qualitative in nature and of sufficient detail supporting the current interpretations.</li> <li>Review of logging is conducted following the return of geochemical results.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <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> <li>RC drill sample taken from a cone splitter per metre downhole is to industry standard and appropriate for the lithologies being intercepted. The simultaneous collection of bulk sample and 2 representative A and B samples of 3-4kg each maximises the sample quality and ensures samples are representative. All samples were dry before sending for analysis. Any wet sample was still collected by the same method to ensure consistency with excess moisture sun dried prior to laboratory submission. No sample bias through lost material is likely in this process. Additional cleaning was completed on the cone splitter after introduction of wet sample.</li> <li>Core is cut to ½ core through a standardised procedure that includes consistent sampling of the same side of the cut core. Core is sampled to lithological, structural and mineralised boundaries with sample intervals between 30cm and 1m in length to allow sufficient sample for representative analysis. Intervals selected for laboratory analysis are identified through visual logging by a geologist and utilises a handheld XRF to confirm the presence of mineralisaton.</li> <li>A Vanta pXRF was used with reference standards (CRM) to ensure accuracy of readings. No results reported are from pXRF sampling.</li> </ul>
Quality of assay data and laboratory tests	<ul> <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> <li>Samples discussed in this report were analysed at Bureau Veritas,         Adelaide for MA101/MA102 Mixed Acid Full Digest or LB100 Lithium Borate         Fusion and AR200 Mini (modified) Aqua Regia Digest. Originally reported         analysis previously reported was by MA101/MA102 Mixed Acid Full Digest         with ICP Scan. The Mixed Acid Full Digest is a broad suite multi-element         analysis using 4-acid digest ICP-MS. Gold and PGE analysis was by Fire         Assay ICP-OES. Gold and PGE elements were not re-analysed by the         processes reported in this document.</li> <li>Lithum borate fusion analysis process provides complete dissolution of         most minerals including silicates. These fusion results were statistically         compared to original mixed acid digest results for a comparison of         accuracy. No statistically significant difference was found between</li> </ul>



Criteria	JORC Code explanation	Commentary
		original mixed acid digest results and re-assayed lithium borate fusion results. Minor differences were observable at very low grades due to difference in detection limit between analysis techniques and analysis technique result rounding effects. The statistical analysis of fusion vs full acid digest analytical techniques show no notable change to the calculated percentage recovery using results of either technique.  • Mini or modified aqua regia digest provides a method for assessing acid soluble elements, this is not a total digest and can also be useful for element profiling purposes. The Bureau Veritas default lab technique includes a defined volume ratio of HNO3 and HCl acid that is bulked up in water and presented to instrumentation.  • The comparison between lithium borate fusion and the modified aqua regia results in the context of this document provides an indication of readily soluble rare earth elements. This analysis and comparison provides an early guide to the value of follow up metallurgical assessment that evaluates acid strength and particle size (if applicable) for optimal recoveries.  • Fusion and Modified Aqua Regia re-analysis included sample QA/QC. This included standards (5 different CRM to cover low mid and higher-grade material of various elements including but not limited to copper, zinc, scandium, cerium, lanthanum, and neodymium) and duplicates were included in the re-analysis and reported in the laboratory results. QA/QC samples included Company selected CRM material including blank material and duplicate samples. Laboratory QAQC has additional checks including standards, blanks and repeat samples that were conducted regularly on every batch.  • Across both batches submitted for modified aqua regia analysis the total sample geochemical assay results received include total sampling QAQC (standards and duplicates) of 7.0%. The 34 (16 batch 1 + 18 batch 2) standards submitted were within acceptable limits for certified elements whilst 20 (6 batch 1 + 14 batch 2) duplicates submitted we
Verification of sampling and assaying	<ul> <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> </ul>	<ul> <li>Taruga's geologists have sufficient experience to carry out core processing and logging and have experienced senior geologists and technical consultants available for verification and validation of results and measurements.</li> </ul>



Criteria	JORC Code explanation	Commentary
	Discuss any adjustment to assay data.	<ul> <li>Significant intercepts are reported by Company representatives based on best practice and available information.</li> <li>All significant intercepts are reported as downhole lengths and are not necessarily indicative of true thickness unless stated.</li> <li>Logs and measurements were all recorded in hard copy on paper before digital data entry. All data is stored securely with digital backups. All data entry procedures include data validation.</li> </ul>
Location of data points	<ul> <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> <li>All drillhole collars were surveyed after drilling using a handheld GPS. Datum used is GDA94 Zone 54.</li> <li>Downhole surveys were taken at 6m (collar), 30m and every subsequent 30m drilled with a final survey at end of hole depth. Downhole surveys were taken with a reflex single shot or gyroscopic hole survey tool when available.</li> </ul>
Data spacing and distribution	<ul> <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> <li>Data is insufficient to be used in a Mineral Resource Estimate. The drilling is reconnaissance style exploration with data collected sufficient to guide and define further exploration activities.</li> <li>RC sample intervals and analysis are single metre interval samples; no sample compositing has been used.</li> <li>Core sample intervals are based on lithological, structural and mineralised boundaries.</li> </ul>
Orientation of data in relation to geological structure	<ul> <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> <li>The previous and current drilling being reported has identified and defined a variable sedimentary package within the Worumba diapir mega breccia including various rafted blocks in differing orientation. Outcrop of the dolomite metasediments on the margin of the Worumba Diapir and rafted sediments within the diapir assist in drillhole design to best intercept the stratigraphy.</li> <li>Where possible drillholes are angled towards the interpreted stratigraphic horizon so intercepts are generally reflective of true thickness although some holes drilled in a deliberate orientation to gain perspective of stratigraphic or structural orientation will not be a direct reflection of true thickness. All reported lengths are to be considered downhole lengths unless stated as calculated true thickness.</li> </ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>The original samples were collected, processed and despatched by the Supervising Geologist before being sent by courier to Bureau Veritas, Adelaide.</li> </ul>



Criteria	JORC Code explanation	Commentary
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	<ul> <li>No audits completed. Internal processes routinely review the appropriate application of sampling and data statistical analysis techniques in relation to current knowledge of stratigraphy and mineralisation style.</li> </ul>



## Section 2 Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	<ul> <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> <li>Exploration Licence EL6541 (Mt Craig/MCCP) is 100% owned by Strikeline Resources Pty Ltd a fully owned subsidiary of Taruga Minerals Ltd. The tenement is in good standing with no known impediments to operate in the area.</li> </ul>
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	Historical Exploration: Mt Craig     Extensive small-scale historic mining for base metals occurred throughout the area. This occurred most prominently at the Wyacca Mine and Wirrawilka workings. Further historic shafts at Iron King are presumed to have mined Silver and Gold. From the 1960's onwards numerous companies have explored the region with soil, stream, rock chip & channel sampling, geophysics and drilling campaigns. The most prominent prior exploration was conducted by Cams Leases Pty Ltd., Copper Range (SA) Pty Ltd., Gold Copper Exploration Ltd., SAEI Triassic Coal Exploration & Utah Development Company Ltd.
Geology	Deposit type, geological setting and style of mineralisation.	Mt Craig: The Morgan Creek prospect is dominated by the Worumba diapir which include large rafted blocks of sediments including those of the Tapley Hill Fm, also within the diapir are mafics of variable origin. The western margin includes a target contact between the dolomite metasediments and the Worumba Diapir. Dolomite is a common reactive rock type within the diapir related deposits, trapping mineralisation close to the diapir margins. Dissolved metalliferous brines from the diapir travel along structural conduits to sites of suitable reactive deposition. Exploration has identified skarn exposures at Morgan Creek, including recently drilled Hydrothermal Hill prospect intercepting a mafic-ultramafic skarn system with magnetite-pyrite skarn that includes PGE, REE and cobalt mineralisation.
Drill hole Information	<ul> <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> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the</li> </ul> </li> </ul>	<ul> <li>All completed drillhole collar information and prior geochemical assay results have been previously released.</li> <li>Currently available and not previously released drill assay data is being reported.</li> </ul>



					TITOUT
Criteria	JORC Code explanation	Commentary	<b>y</b>		
	<ul> <li>drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</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>				
Data aggregation methods	<ul> <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</li> </ul>	calcı • Rare aggr elem	dard element to stoich ulating and reporting of earth elements (REE) of regated as total rare enterest TREO and combine E/HREO), light rare ear	oxide equivale converted to a arth elements ned as heavy r	nt elements. oxide equivaler TREE or total ra care earth elem
	shown in detail.  The assumptions used for any reporting of metal equivalent values should be clearly stated.	rare o stanc repo • Elem multi	earth elements or mag dards. HREO, CREO an	gnetic rare ear d MREO as a p oxide conversio	th oxide (MREC percentage of on factors show
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or mag dards. HREO, CREO an rted. ent-to-stoichiometric o ply wt% element by no	gnetic rare ear d MREO as a p oxide conversio	th oxide (MREC percentage of on factors show
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or mag dards. HREO, CREO an rted. lent-to-stoichiometric of ply wt% element by no noxide.	gnetic rare ear d MREO as a p oxide conversic umerical value	th oxide (MREC percentage of on factors show below for equ
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or mag dards. HREO, CREO an rted. ent-to-stoichiometric of ply wt% element by no noxide.	gnetic rare ear d MREO as a p  oxide conversic umerical value  Oxide	th oxide (MREC percentage of on factors show below for equi
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or mag dards. HREO, CREO an rted. lent-to-stoichiometric of ply wt% element by no noxide.  Element  Cerium	gnetic rare ear d MREO as a p  oxide conversic umerical value  Oxide  Ce2O3	th oxide (MREC percentage of p
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or magdards. HREO, CREO and rted. Ident-to-stoichiometric of ply wt% element by number oxide.  Element  Cerium  Dysprosium	gnetic rare ear d MREO as a p exide conversion umerical value  Oxide  Ce2O3  Dy2O3	th oxide (MREC percentage of p
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or magdards. HREO, CREO and rted. Ident-to-stoichiometric of ply wt% element by non oxide.    Element   Cerium     Dysprosium     Erbium	pretic rare early dependent of the conversion of	th oxide (MREC percentage of p
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or magdards. HREO, CREO and rted. In the content of	pretic rare early dependent of the conversion of	th oxide (MREC percentage of p
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or magdards. HREO, CREO and rted. eent-to-stoichiometric of ply wt% element by non oxide.  Element Cerium Dysprosium Erbium Europium Gadolinium	prefic rare early discovered of the conversion o	## Oxide (MRECO percentage of opercentage of operce
	The assumptions used for any reporting of metal equivalent values should be	rare o stanc repo • Elem multi	earth elements or magdards. HREO, CREO and rted. International contents of the	pretic rare early distributed and material value.  Oxide Conversion of the conversio	Factor



Criteria	JORC Code explanation	Commentary				
			Praseodymium	Pr <sub>2</sub> O <sub>3</sub>	1.1703	
			Samarium	Sm <sub>2</sub> O <sub>3</sub>	1.1596	
			Terbium	Tb <sub>2</sub> O <sub>3</sub>	1.151	
			Thulium	Tm <sub>2</sub> O <sub>3</sub>	1.1421	
			Yttrium	Y <sub>2</sub> O <sub>3</sub>	1.2699	
			Ytterbium	Yb <sub>2</sub> O <sub>3</sub>	1.1387	
Relationship between mineralisation	<ul> <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</li> </ul>	MREO (Nd2C)     HREO (Eu2O O3)     LREO r (La2O CREO (Nd2C)     Where report sampli multip      Where shown	refers to the sum of all I refers to the 4 magnetic 13+Pr2O3+Dy2O3+Tb2O3+Dy2O3+Tb2O3+Dy2O3+Tb2O3+Dy2O3+Tb2O3+Dy2O3+Tb2O3+Dy2O3+Pr2O3+Dy2O3+Pr2O3+Dy2O3+Pr2O3+Dy2O3+Pr2O3+Dy2O3	c rare earth of 3) earth oxides 03+Ho2O3+Er: arth oxides 03+Sm2O3) earth oxides 3+Y2O3) ficant interceptiverage gradicant interception.	pts and aggrees considering of sare signification width ment. Some h	egate data is givariable ant because of as have been toles drilled in a
mineralisation widths and intercept lengths	<ul> <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>	oriento report	rate orientation to gair ation and as such will need lengths are to be co ated true thickness.	ot be a direct	reflection of t	rue thickness. All
Diagrams	<ul> <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>	featur	priate plan and cross s es and results are provi ation available from pr	ded in the rep	ort with addit	



Criteria	JORC Code explanation	Commentary
Balanced reporting	<ul> <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> <li>All relevant information is reported within the document or included in the appendices if not reported previously.</li> </ul>
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 relevant and meaningful recent exploration or known historical exploration data is included in this report or has been previously released.
Further work	<ul> <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>	The assessment of rare earth element (REE) distribution and indicative recoveries supports investigations into assessing the volume extent of potential mineralisation via drilling which may include shallow slim line RC or other methods. In addition the requirements for further metallurgical analysis can be implemented to evaluate composition of extraction solution and particle size for optimal potential recoveries.