

**ASX Announcement** 9 June 2023

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## **Exploration programme to commence on the critical mineral potential at the Ngualla deposit**

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- **The Ngualla deposit is a large carbonatite system which hosts one of the world's highest grade undeveloped rare earth deposits**
- **No drilling has been undertaken at Ngualla since the definition of a high-grade Mineral Resource and Ore Reserve more than five years ago while studies and approvals were progressed**
- **Historic drilling has identified potential for a range of critical minerals including monazite-hosted rare earths, niobium, phosphate and fluorspar outside of the current Mineral Resource area**
- **Peak is initiating a new exploration programme to test this potential which will entail:**
  - **~4,000m of RC drilling**
  - **Maiden drilling within the Breccia Zone to the northeast of the carbonatite**
  - **Development of a conceptual model of the carbonatite Northern Zone by SRK**
- **The exploration programme will not divert Peak's primary focus from progressing Ngualla to a targeted Financial Investment Decision by the end of September 2023**

Peak Rare Earths Limited (ASX: **PEK**) ("**Peak**" or the "**Company**") is pleased to announce the commencement of a new exploration programme at its Ngualla Rare Earth Project ("**Ngualla Project**").

The Ngualla Project is a large carbonatite system which contains a large, high grade, bastnaesite-hosted rare earth deposit. The advancement of development studies and project approvals has been Peak's main focus at the Ngualla Project since drilling completed in 2016 to support the definition of Ore Reserves. Limited recent exploration has been undertaken outside of the Bastnaesite Zone.

A new exploration programme will now commence to test the multi-commodity exploration potential identified at the Ngualla Project. The initial focus of this programme will be two highly prospective areas within the deposit, the Northern Zone and Breccia Zone, which are prospective for a range of critical commodities including monazite-hosted rare earths, niobium, phosphate and fluorspar.

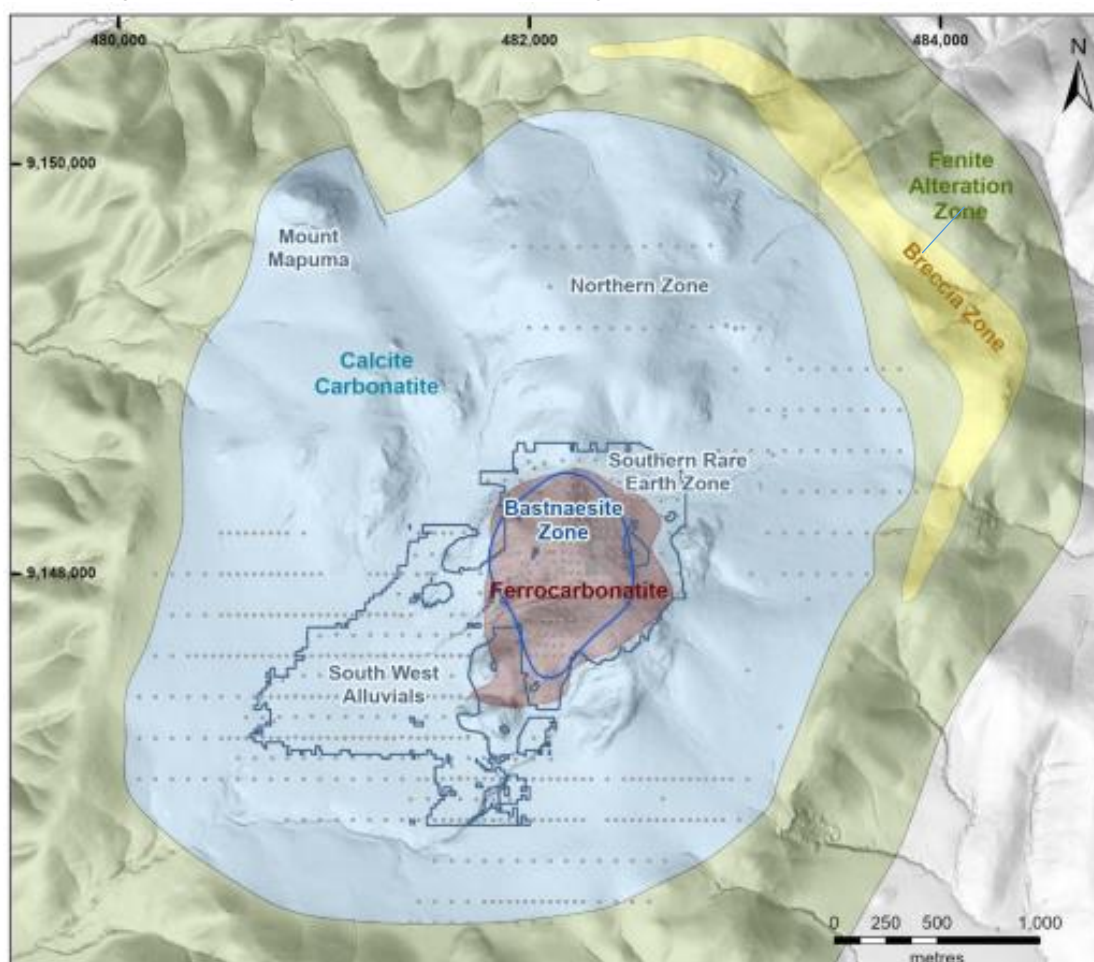
Peak intends to commence a ~4,000m RC drilling campaign aimed at further delineating the Northern Zone and Breccia Zone. A tender process for exploration drilling has commenced and it is expected that the initial drilling programme will extend from July to October 2023.

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The estimated cost of this exploration programme is ~A\$1.5 million and will be funded from Peak's recent equity capital raising<sup>1</sup> which is consistent with previous market guidance.

The initiation of this new exploration programme will not impact Peak's primary focus on progressing the Ngualla Project to a Final Investment Decision by the end of September 2023. Key technical and commercial workstreams are well advanced with Early Works planning and Front-End Engineering and Design ("**FEED**") underway. The Ngualla Project is already supported by a Bankable Feasibility Study Update, JORC compliant Ore Reserves (that support a 24-year life of mine) as well as extensive drilling and resource definition. A summary of previous drill work completed within the Bastnaesite Zone is provided in Appendix 1.

*Figure 1. The Ngualla Deposit (showing areas and previous drill holes)*



<sup>1</sup> On 1 May 2023 Peak announced the receipt of commitments to complete an A\$27.5 million placement. The first tranche comprising of A\$14.3 million completed on 5 May 2023 with the remaining balance of \$13.2 million subject to shareholders approval at general meeting scheduled for 15 June 2023.

**ASX Announcement** 9 June 2023**Northern Zone**

The Northern Zone of the Ngualla deposit is the primary exploration prospect. It covers an area of 0.7km<sup>2</sup> and is located ~2km North of the Bastnaesite Zone. The Northern Zone is highly prospective for a range of critical minerals including:

- **Phosphate** – an increasingly critical global commodity given its role as fertiliser feedstock as well as the rapid uptake of lithium iron phosphate (“**LFP**”) EV battery technology. Phosphate rock has recently been added to the EU’s list of 20 Critical Raw Materials while spot price for rock phosphate has appreciated at compound annual growth rate of ~60% over the last three years<sup>2</sup>;
- **Niobium** – an alloy metal with a growing range of uses within high tech and green energy applications including the recent emergence of niobium-titanium oxide EV anode cells. Niobium is currently listed as a critical mineral by Australia, India, Japan, China and the EU and is ranked second out of 50 within the USA’s critical mineral list; and
- **Monazite** – the other prevalent mineralogy for light rare earths along with bastnaesite, which forms the basis of the Ngualla Project’s Ore Reserves. Monazite within the Northern Zone could potentially support a parallel rare earth operation and be used as either a direct concentrate export product or a feedstock for an integrated refinery.

There are also elevated levels of heavy rare earths within the Northern Zone, which will be targeted as part of the drilling programme.

The proposed drilling campaign in the Northern Zone will comprise of ~30 Reverse Circulation (“**RC**”) drill holes and ~3,000m of drilling. It will be used to further define and delineate possible mineralisation of prospective commodities. The drilling campaign will build upon previous drilling undertaken through 2011 – 2012, where 31 RC drill holes and two diamond drill holes were completed for a total of ~2,500m. Mineralisation of the Northern Zone is currently open in all directions.

A summary of key intersections from this drilling campaign is included in Table 1.

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<sup>2</sup>Index Mundi

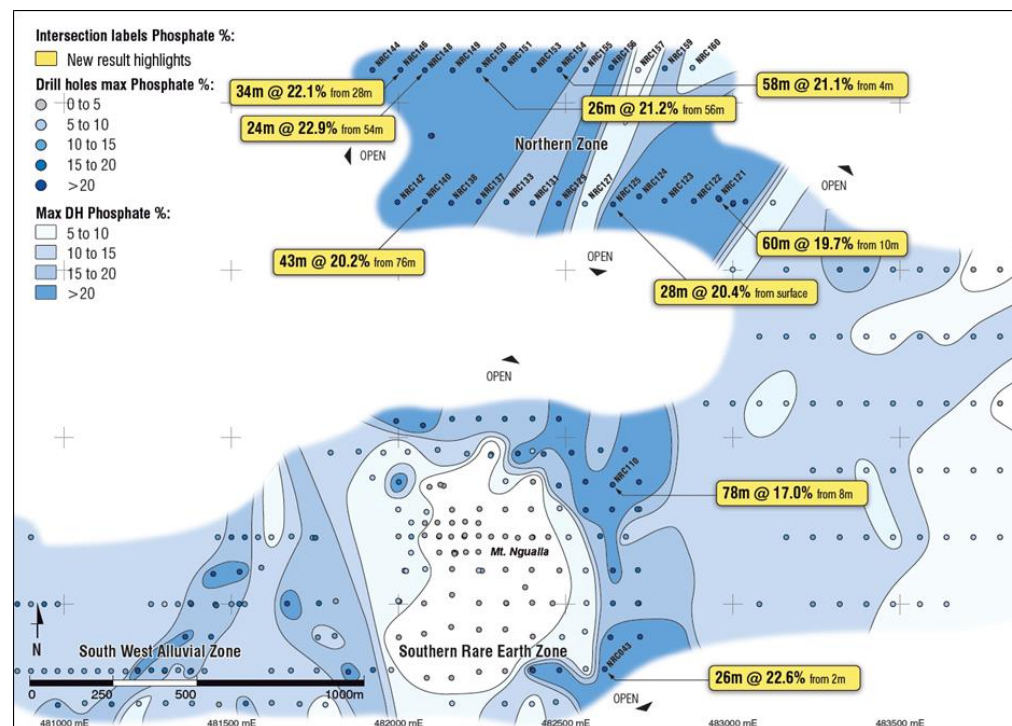
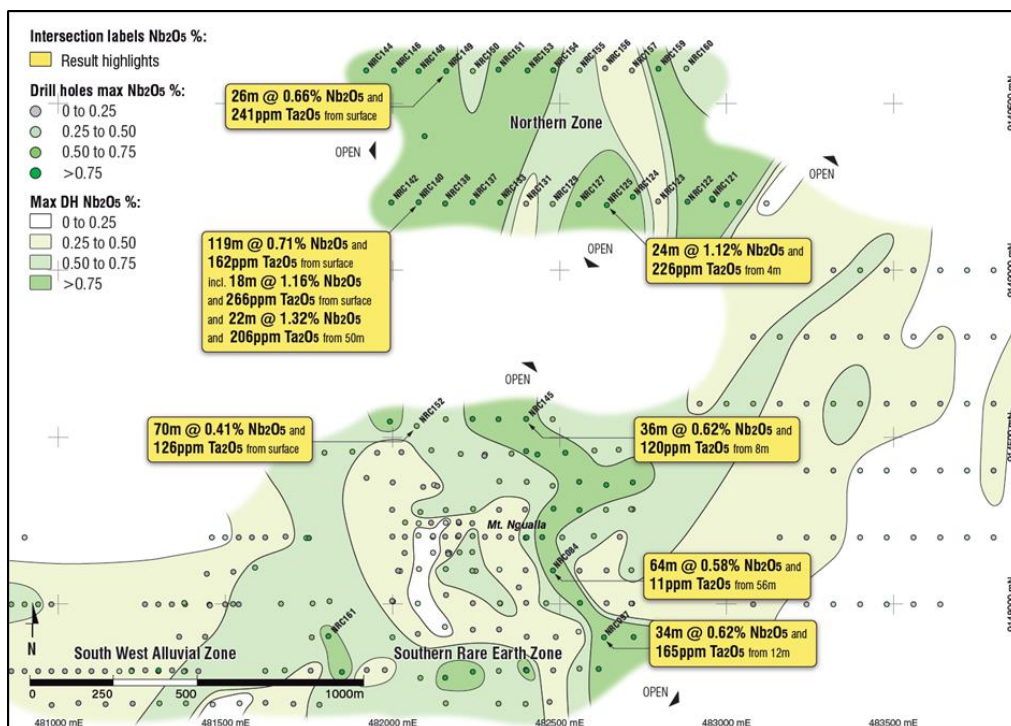
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Table 1. Northern Zone – Significant intersections<sup>3</sup>

Niobium Intersections	
Drill Hole	Intersection
NDD003 <sup>A</sup>	62m at 0.70% Nb <sub>2</sub> O <sub>5</sub> from surface
NRC121 <sup>B</sup>	74m at 0.56% Nb <sub>2</sub> O <sub>5</sub> (26m at 0.91% Nb <sub>2</sub> O <sub>5</sub> ) from surface
NRC122 <sup>B</sup>	22m at 0.55% Nb <sub>2</sub> O <sub>5</sub> (6m at 1.06% Nb <sub>2</sub> O <sub>5</sub> ) from surface
NRC125 <sup>C</sup>	24m at 1.12% Nb <sub>2</sub> O <sub>5</sub> from surface
NRC140 <sup>D</sup>	119m at 0.71% Nb <sub>2</sub> O <sub>5</sub> from surface and 22m at 1.32% Nb <sub>2</sub> O <sub>5</sub> from 50m
Phosphate Intersections	
Drill Hole	Intersection
NDD003 <sup>A</sup>	61m at 21.0% P <sub>2</sub> O <sub>5</sub> from surface
NRC125 <sup>C</sup>	28m at 20.6% P <sub>2</sub> O <sub>5</sub> from surface
NRC140 <sup>D</sup>	12m at 21.3% P <sub>2</sub> O <sub>5</sub> from 2m and 43m @ 20.2% P <sub>2</sub> O <sub>5</sub> from 76m
NRC150 <sup>D</sup>	14m at 23.4% P <sub>2</sub> O <sub>5</sub> from 8m and 26m @ 21.2% P <sub>2</sub> O <sub>5</sub> from 56m
NRC154 <sup>D</sup>	58m at 21.1% P <sub>2</sub> O <sub>5</sub> from 4m
Rare Earth (Monazite) Intersections	
Drill Hole	Intersection
NRC127 <sup>C</sup>	34m at 1.52% REO from surface
NRC129 <sup>C</sup>	22m at 1.77% REO from surface and 10m at 2.74% REO from 44m
NRC133 <sup>D</sup>	48m at 1.33% REO from 18m
NRC140 <sup>D</sup>	66m at 1.56% REO from 10m
NRC149 <sup>D</sup>	26m at 1.52% REO from surface

<sup>3</sup> Superscript letters reference the corresponding disclosure announcement that are set out in Table 8 in Appendix 3

Figure 2(a) and (b). The Northern Zone (showing previous drill holes and intercepts)





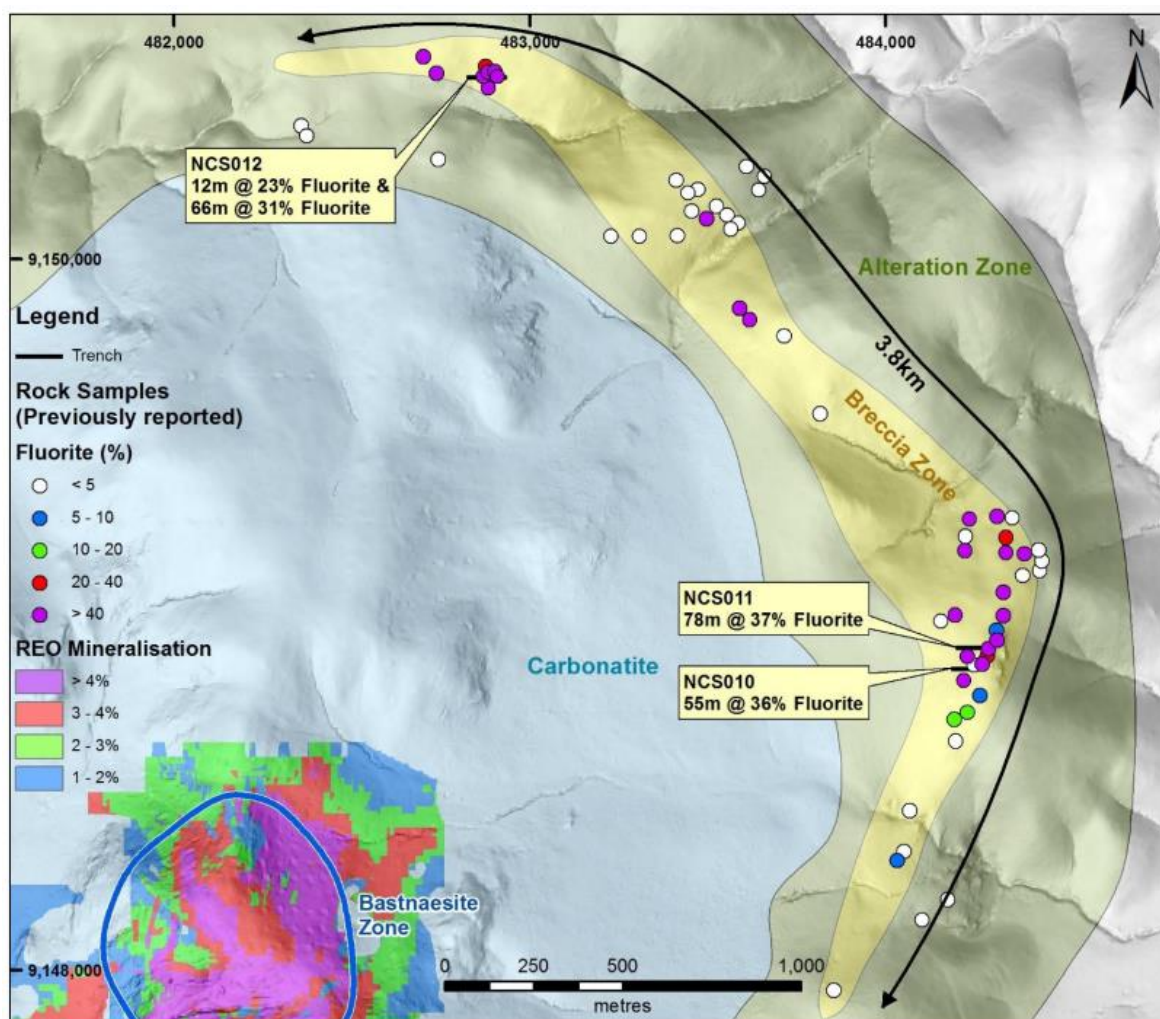
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### Breccia Zone

A maiden drilling campaign will also be undertaken within the Breccia Zone, an area of 0.4km<sup>2</sup> that is located ~2km North of the Bastnaesite Zone. The Breccia Zone is highly prospective for fluorspar, which is listed as a critical mineral by the USA, Canada, Japan and the EU. Key existing EV applications for fluorspar include lithium fluoride solution, which is used as an electrolyte within lithium batteries, and hydrofluoric acid, which is used to purify graphite anode. Fluoride-ion battery technology is also a potential future alternative to lithium-based batteries.

The maiden drilling campaign in the Breccia Zone will comprise of ~10 RC drill holes and ~1,000m of drilling. Whilst no drilling has been undertaken in the Breccia Zone, several trenches were excavated in the area as part of a soil sampling campaign completed in 2017. Mineralisation is currently open in all directions. A summary of key intersections from this trench work is included in Table 2.

Figure 3. The Breccia Zone (showing previous trenches and intercepts)



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*Table 2. Breccia Zone<sup>4</sup> – Significant intersections*

Fluorspar Intersections	
Trench	Intersection
NCS010 <sup>G</sup>	55m at 36% CaF <sub>2</sub> from 0m to end including 12m at 54% CaF <sub>2</sub>
NRS011 <sup>G</sup>	78m at 37% CaF <sub>2</sub> from 0m to end including 8m at 62% CaF <sub>2</sub>
NCS012 <sup>G</sup>	66m at 31% CaF <sub>2</sub> from 34m

### Exploration Programme Activities

As a precursor to its upcoming drilling programme, Peak has engaged SRK to develop a conceptual geological model for the Northern Zone of the Ngualla Deposit. This will assist in delineating prospective mineralisation as well as further refining individual drill targets. It is anticipated that SRK will complete this work by mid-July.

Peak has commenced a tender process for the drilling scope of work and it is anticipated that the drilling programme will be undertaken between July and October 2023.

This announcement is authorised for release by the Company's Board of Directors.

#### **Bardin Davis**

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<sup>4</sup> Superscript letters reference the corresponding disclosure announcement that are set out in Table 8 in Appendix 3



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### **Compliance Statement**

This announcement includes exploration results, Mineral Resources and Ore Reserves previously disclosed to the market. Please refer to Table 8 (Appendix 3) for the relevant announcement.

The Company confirms that at this time it is not aware of any new information or data that materially affects the information included in the relevant announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant announcement continue to apply and have not materially changed.

The ASX announcements are available to view on the Company's website and the ASX Announcements platform.

### **Forward Looking Statements**

This announcement contains forward-looking information which is based on the assumptions, estimates, analysis and opinions of management and engaged consultants made in light of experience and perception of trends, current conditions and expected developments, as well as other factors believed to be relevant and reasonable in the circumstances at the date that such statements are made, but which may prove to be incorrect.

Assumptions have been made by the Company regarding, among other things: the commodity prices, the timely receipt of required approvals, the accuracy of capital and operating cost estimates, the completion of studies on its exploration and development activities, the ability of the Company to operate in a safe, efficient and effective manner and the ability of the Company to obtain financing as and when required and on reasonable terms. Readers are cautioned that the foregoing list is not exhaustive of all factors and assumptions which may have been used by the Company.

Although management believes that the assumptions made and the expectations represented by such information are reasonable, there can be no assurance that the forward-looking information will prove to be accurate.

Forward-looking information involves known and unknown risks, uncertainties, and other factors which may cause the actual results, performance or achievements of the Company to be materially different from any anticipated future results, performance or achievements expressed or implied by such forward-looking information. Readers should not place undue reliance on forward-looking information. Neither the Company nor its directors undertake any obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.



## APPENDIX ONE: NGUALLA RARE EARTH PROJECT

The initial focus of the Ngualla Rare Earth Project is the Weathered Bastnaesite Zone; a thick high-grade blanket of rare earth mineralisation that occurs close to surface. The Weathered Bastnaesite Zone contains a series of favourable properties including low levels of acid consuming minerals such as calcite and dolomite. A JORC compliant Ore Reserve was completed for the Weathered Bastnaesite Zone in 2016 and subsequently updated as part of the BFS Update completed in October 2022.

*Table 3. Ngualla Rare Earth Project – Ore Reserve (October 2022<sup>H</sup>); 3% TREO cut-off*

Category	Ore (Mt)	TREO %	Contained TREO (kt)
Proved	17.0	4.78%	813
Probable	1.5	5.10%	74
<b>Total</b>	<b>18.5</b>	<b>4.80%</b>	<b>887</b>

The Weathered Bastnaesite Zone is part of the much larger Ngualla complex which also includes the broader Southern Rare Earth Zone and adjacent Southwest Alluvials Zone. A Mineral Resource Estimate was completed for the Ngualla deposit in 2016 as part of the BFS completed in 2017. The Weathered Bastnaesite Zone represents 22% of the total Mineral Resource estimate at a 1% TREO cut-off grade.

*Table 4. Ngualla deposit – Mineral Resource (February 2016<sup>I</sup>); 1% TREO cut-off*

Category	Tonnage (Mt)	TREO %	Contained TREO (kt)
Measured	86.1	2.61%	2,250
Indicated	112.6	1.81%	2,040
Inferred	15.7	2.15%	340
<b>Total</b>	<b>214.4</b>	<b>2.15%</b>	<b>4,620</b>

The Mineral Resource estimate and Ore Reserve for the Ngualla deposit are supported by extensive drill work undertaken from 2010 to 2015. Within this period, 893 drill holes were assayed for 45,683m of drilling, including 3,494m of diamond drilling. Key intercepts from this drilling campaign are set out in Table 6.

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Table 5. Ngualla deposit – previous drill work

Year	Total		Aircore		RC		Diamond	
	Holes	Metres	Holes	Metres	Holes	Metres	Holes	Metres
2010	398	7,720	373	5,921	22	1,467	3	292
2011	253	19,046	107	1,980	140	16,204	6	862
2012	130	13,612	1	2	121	12,583	8	1,027
2015	112	5,305	0	0	87	3,992	25	1,313
<b>Total</b>	<b>893</b>	<b>45,683</b>	<b>481</b>	<b>7,943</b>	<b>370</b>	<b>34,246</b>	<b>42</b>	<b>3,494</b>

Table 6. Ngualla deposit – significant intersections<sup>5</sup>

Rare Earth Intersections	
Hole	Intersection
NRC176 <sup>E</sup>	140m at 5.21% REO from surface
NDD020 <sup>F</sup>	18m at 6.46% REO from 6m
NDD021 <sup>F</sup>	33m at 6.09% REO from surface
NDD024 <sup>F</sup>	79m at 5.71% REO from surface
NDD025 <sup>F</sup>	126m at 5.52% REO from surface
NDD028 <sup>F</sup>	22m at 5.69% REO from surface
NRC338 <sup>F</sup>	16m at 6.74% REO from 8m
NRC346 <sup>F</sup>	18m at 7.17% REO from surface
NRC349 <sup>F</sup>	74m at 7.05% REO from 12m
NRC352 <sup>F</sup>	10m at 6.47% REO from surface
NRC287 <sup>F</sup>	24m at 6.01% from surface
NRC294 <sup>F</sup>	24m at 6.51% REO from surface
NRC299 <sup>F</sup>	24m at 6.19% REO from surface
NRC302 <sup>F</sup>	24m at 6.98% REO from surface
NRC307 <sup>F</sup>	24, at 6.22% REO from surface
NRC308 <sup>F</sup>	24m at 7.62% REO from surface

<sup>5</sup> Superscript letters reference the corresponding disclosure announcement that are set out in Table 8 in Appendix 3

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### APPENDIX TWO: DRILL HOLE INFORMATION

Table 7. Drill Hole Information<sup>6</sup>

Hole ID	East	North	RL	Hole depth (m)
NDD003 <sup>A</sup>	482,165	9,148,154		102
NRC121 <sup>B</sup>	482,957	9,149,214		90
NRC122 <sup>B</sup>	482,884	9,149,205		85
NRC125 <sup>C</sup>	482,642	9,149,195		80
NRC140 <sup>D</sup>	482,079	9,149,203		120
NRC150 <sup>D</sup>	482,241	9,149,596		90
NRC154 <sup>D</sup>	482,482	9,149,598		68
NRC127 <sup>C</sup>	482,558	9,149,197		96
NRC129 <sup>C</sup>	482,480	9,149,198		120
NRC133 <sup>D</sup>	482,323	9,149,202		80
NRC149 <sup>D</sup>	482,162	9,149,056		80
NRC176 <sup>E</sup>	482,200	9,147,947		140
NDD020 <sup>F</sup>	482,279	9,148,002	1,659	27
NDD021 <sup>F</sup>	482,076	9,147,913	1,590	38
NDD024 <sup>F</sup>	482,201	9,147,953	1,631	80
NDD025 <sup>F</sup>	482,359	9,148,056	1,659	140
NDD028 <sup>F</sup>	482,319	9,148,155	1,653	22
NRC338 <sup>F</sup>	482,032	9,147,606	1,618	55
NRC346 <sup>F</sup>	482,036	9,147,946	1,602	120
NRC349 <sup>F</sup>	482,082	9,147,956	1,610	120
NRC352 <sup>F</sup>	481,964	9,147,853	1,568	10
NRC287 <sup>F</sup>	482,318	9,148,132	1,656	24
NRC294 <sup>F</sup>	482,328	9,148,152	1,653	24
NRC299 <sup>F</sup>	482,338	9,148,112	1,655	24
NRC302 <sup>F</sup>	482,348	9,148,131	1,651	24
NRC307 <sup>F</sup>	482,357	9,148,121	1,651	24
NRC308 <sup>F</sup>	482,357	9,148,111	1,651	24
NCS010 <sup>G</sup>	484,184	9,148,846	1,594	55
NRS011 <sup>G</sup>	484,197	9,148,906	1,589	78
NCS012 <sup>G</sup>	482,822	9,150,510	1,646	114

<sup>6</sup> Superscript letters reference the corresponding disclosure announcement that are set out in Table 8 in Appendix 3

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### APPENDIX THREE: REFERENCES

*Table 8. References – previous announcements*

Ref	Previous Announcement	Date
A	Rare Earth, Niobium – Tantalum and Phosphate Drill Results, Ngualla	24 Feb 2011
B	New Rare Earth, Niobium, Tantalum and Phosphate Intersections from Ngualla	21 Dec 2021
C	Rare Earth, Niobium – Tantalum and Phosphate Zones Extended Further at Ngualla	18 Jan 2012
D	Final Drill Results Received from the Ngualla Rare Earth Project	15 Feb 2012
E	Wide High Grade Drill Results from Surface at Ngualla Rare Earth Project	1 Aug 2012
F	Update on Ngualla Drill Results and Site Programmes	11 Nov 2015
G	Wide Zones of High-Grade Fluorite Identified at Ngualla	20 Feb 2017
H	Completion of Ngualla Project BFS Update	24 Oct 2022
I	Higher Grade Resource for Ngualla Nearly 1M tonnes REO	22 Feb 2016