NORTHERN MINERALS

QUARTERLY ACTIVITIES REPORT- JUNE 2023

HIGHLIGHTS

- $5.9m grant awarded from the Australian Government's Critical Minerals Development Program, to be applied to specific activities to accelerate the Wolverine Project into production.
- Definitive Feasibility Study (DFS) progressing on schedule with tenders received from the Early Contractor Involvement (ECI) process for the Beneficiation Plant.
- Provisional mine designs and schedules for the open pit followed by an underground mine at Wolverine completed.
- Mining contractors engaged in tender processes for the costing of the mining operations.
- The geotechnical properties test work on the DFS geotechnical drilling completed.
- Non-process infrastructure design and studies progressing well
- Wolverine Deeps exploration drilling completed testing orebody extension at depth, with results indicating a continuation of the mineralised structure:
    - Best results returned from BRWD0068 of 17.6m @ 1.96% TREO from 589m including 9.94m @ 3.27% TREO from 589m.
- Successful application for co-funding from the Northern Territory Government providing for 50% of the project costs to complete a diamond drilling program at the Company's Boulder Ridge REE Project in the west Tanami.
- NAIF completed its Strategic Assessment of the Brown's Range Project and is proceeding to detailed due diligence.

Northern Minerals Limited (**ASX: NTU**) ("**Northern Minerals**" or the "**Company**"), a company advancing towards production at its 100% of the Browns Range Heavy Rare Earths (HRE) Project in northern Western Australia, is pleased to provide an overview of the Company's activities for the period ending 30 June 2023 ("**Quarter**", "**Reporting Period**") to accompany the Appendix 5B.

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Executive Chairman's Review

The June 2023 quarter was focused on the continued advancement of the DFS which is progressing on schedule and due for completion in Q4 of CY2023. Provisional mine designs and schedules and geotechnical properties test work on the DFS geotechnical drilling were completed, with non-process infrastructure design and studies progressing well across multiple areas.

Importantly, during the Quarter Northern Minerals was awarded $5.9m in grant funding from the Australian Government's Critical Minerals Development Program to be applied to specific activities to accelerate Wolverine into production. The Company also continues to advance discussions with Northern Australian Infrastructure Facility ("NAIF") and Export Finance Australia ("EFA"), in regard to additional funding opportunities for Browns Range.

Exploration drilling for a seven-hole diamond drilling program at Wolverine Deeps, testing orebody extension at depth delivered strong results demonstrating a continuation of the mineralised structure. This drilling aims to determine if an Inferred Mineral Resource can be extended down plunge below the current Mineral Resource wireframe, thereby potentially extending the Life of Mine.

Over the coming period, we will continue to advance the DFS with the Final Investment Decision targeted in Q1 2024.

Definitive Feasibility Study

The Definitive Feasibility Study (DFS) for the proposed mining of the Wolverine deposit and associated Beneficiation Plant at Browns Range progressed on schedule during the quarter and is expected to be completed in the fourth quarter of 2023. The xenotime concentrate to be produced from the proposed operation is contracted to be sold to Iluka Resources Limited for processing at their Eneabba rare earth refinery.

DFS - Mine Design & Scheduling

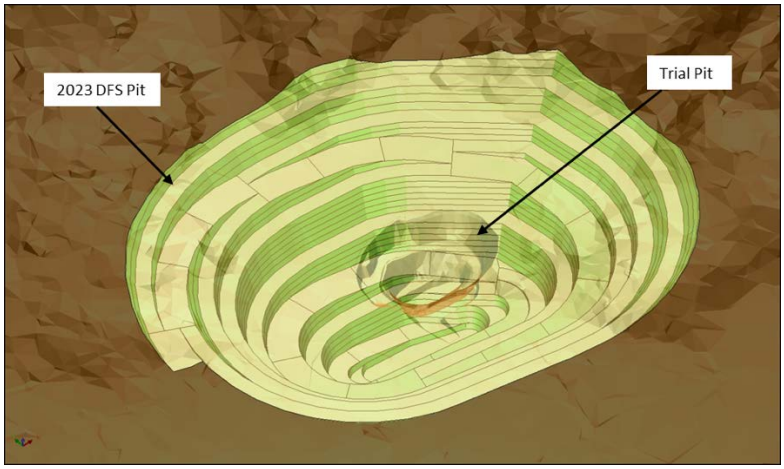
During the Reporting Period the mining team finalised the mining strategy and mine design criteria. Provisional open pit and underground mine designs and schedules were then developed to provide the basis for costing the mining operation for the DFS. The geotechnical test data from the second DFS geotechnical drilling program was received and incorporated into the geotechnical modelling for the underground mining operation.

Entech Pty Ltd advanced the DFS mining studies on the updated Wolverine Mineral Resource Estimate and completed provisional mine designs and schedules for open pit and underground mining operations at Wolverine.

The mine design and schedules for the Wolverine open pit to a depth of 125m were used to develop the documentation for the request for quotation (RFQ) process, which will provide the DFS cost estimates for the open pit mining operation. The RFQ process is underway with three suitably qualified and experienced open pit mining contractors participating in the RFQ.

Figure 1 provides a schematic of the DFS open pit design compared to the existing trial pit mined in 2017.

Figure 1: Wolverine Open Pit Schematic



For the underground mine, which will follow on from the open pit operation at Wolverine, the selected mining method is longitudinal sub-level retreat (SLR) as the deposit shape and geotechnical characteristics of the Wolverine deposit are conducive to SLR mining.

Beck Engineering have progressed the cave flow simulation for the SLR, incorporating the additional geotechnical data and provided the first phase of the cave propagation and subsidence forecasts.

A preliminary ventilation design has been completed which will be reviewed, and updated if required once the final cave flow modelling and designs and schedules are complete. Work has also progressed on the hydrology and hydrogeological study to define the water management requirements for the mining operations.

During the Quarter, the mine design and schedules for the underground SLR at Wolverine were used to develop the documentation for an Early Contractor Involvement (ECI) process which will provide the DFS cost estimates for the underground mining operation. The ECI process is underway with three suitably qualified and experienced underground mining contractors selected to participate in the ECI process.

Figure 2 provides a schematic of the open pit and the underground SLR layout which will be accessed by a boxcut from surface.

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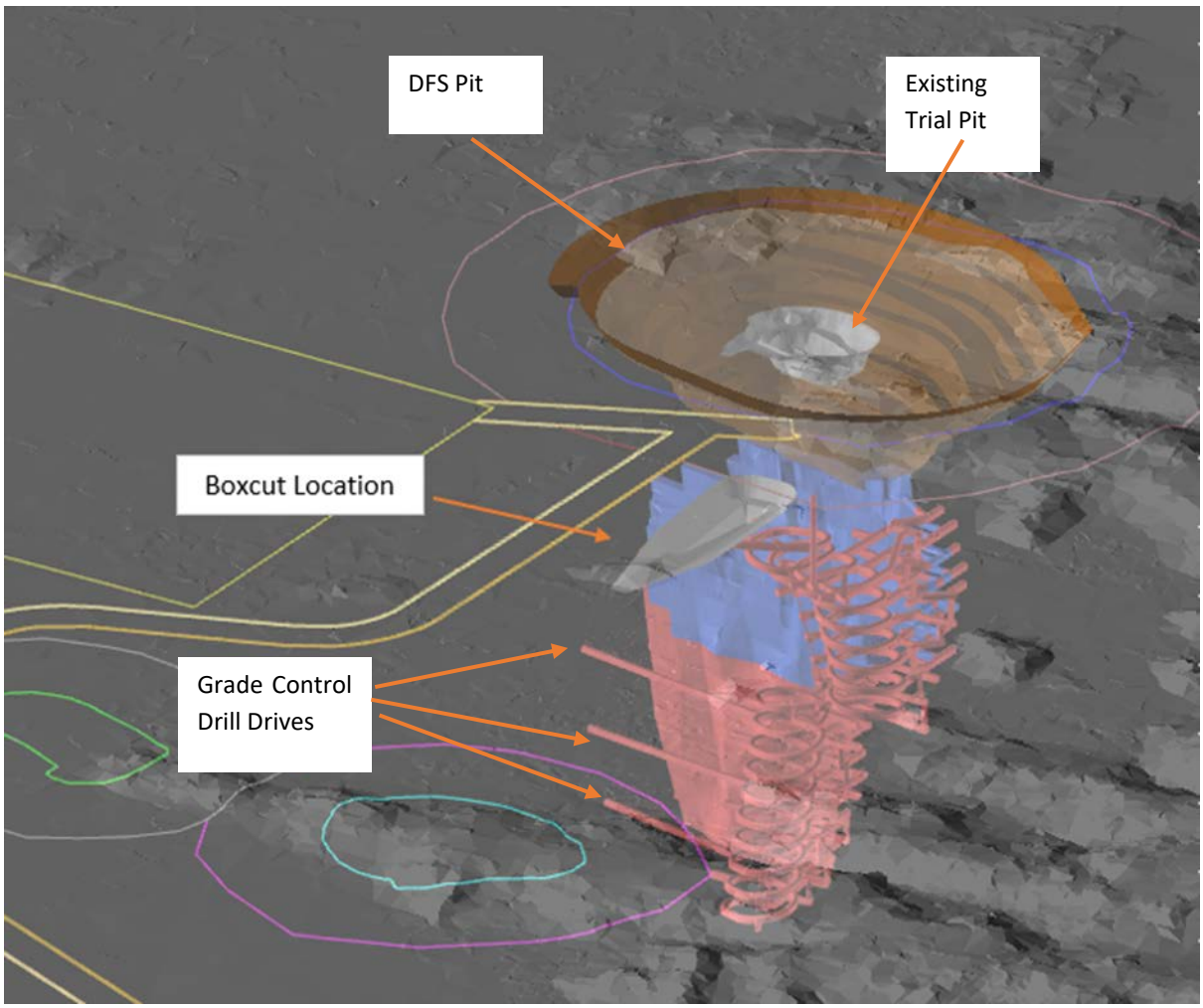
Figure 2: Wolverine Open Pit and SLR Schematic



The work program in the Q3 2023 quarter will focus on completing the engagement with the mining contactors, finalising the cave flow modelling, mine designs and schedules and costing for both the open pit and underground operations as well as finalising water management requirements.

DFS - Process Design and Engineering

During the Quarter, the tenders were received from GR Engineering Services Ltd (GRES) and MACA Interquip (MIQ). for the lumpsum Engineering Procurement and Construction (EPC) contract for the Beneficiation Plant.

The EPC tenders are currently undergoing technical, commercial, and legal adjudication. The completion of this process is expected in the third quarter of 2023, with the final preferred EPC contractor being notified in the fourth quarter of 2023.

The process flowsheet, which leverages the experience and knowledge gained from operating the large scale 10 tph pilot plant at Browns Range from 2018 to 2022, is outlined in Figure 3. The flowsheet includes crushing, ore sorting, milling, magnetic separation, flotation, filtration, drying and bagging, and will produce a high-grade xenotime concentrate containing approximately 25% TREO.

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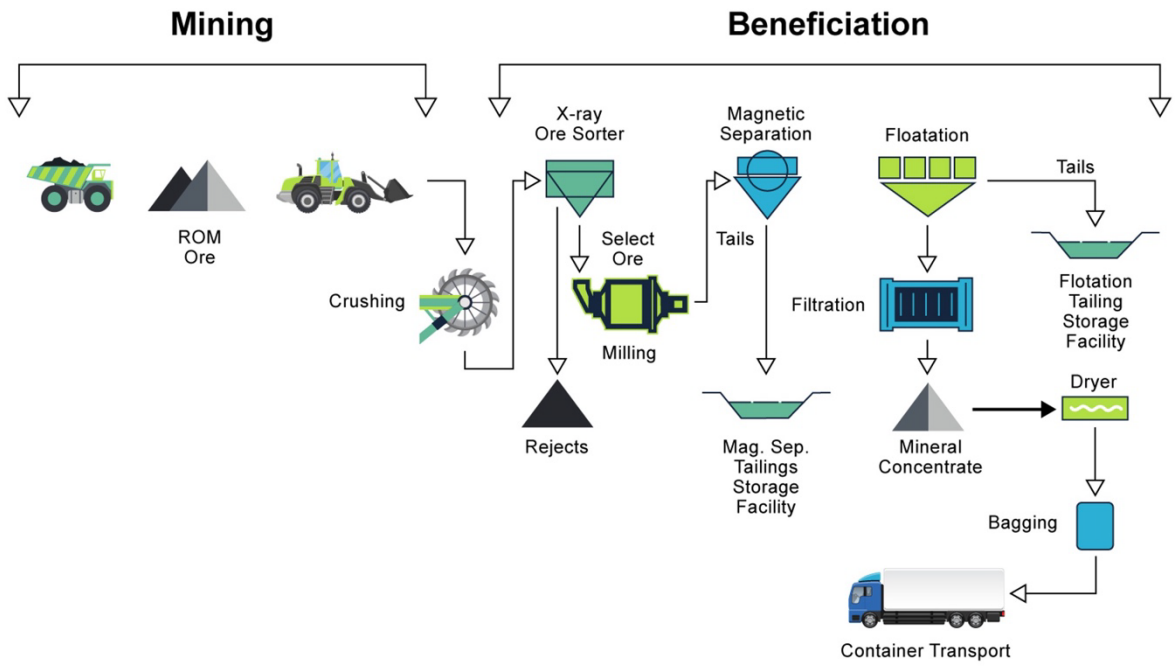
Figure 3: Mining & Process Flowsheet



DFS - Non-Process Infrastructure

Non-Process Infrastructure (NPI) design and studies advanced in several areas during the Reporting Period, including the completion of:

- Tailings Storage Facility (TSF) design
- Airstrip upgrade design completed and reviewed by aerodrome specialists
- Roads and site wide earthworks design which incorporates surface water management design
- Proposed water supply system design
- Camp water services equipment design
- Accommodation village upgrade and NPI buildings design
- Communications study
- Route survey and logistics study for the outbound cargo to delivery of concentrate to Eneabba
- Development of the power supply load and power purchase requirements
- Development of laboratory requirements and services
- Camp services requirements

With fuel storage requirement established and design currently underway.

NPI procurement activities progressed during the Reporting Period, with the following packages out to tender in the market or in adjudication, including:

- Bulk earthworks including TSF, airstrip, roads and site wide earthworks – out to tender
- Power Purchase Agreement – out to tender
- Laboratory services – out to tender
- Camp services – out to tender
- Accommodation and NPI buildings – in adjudication
- Installation of accommodation and NPI buildings – in adjudication
- Camp water services equipment – in adjudication
- Water supply system – in adjudication
- External communications – complete

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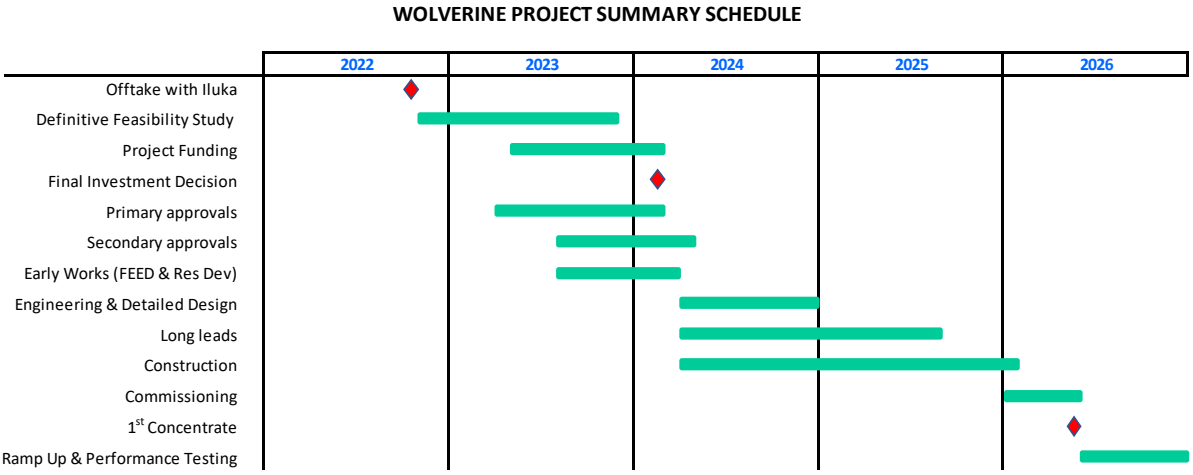
Expenditure on feasibility study activities during the Quarter was approximately $2.2 million with an additional $0.7 million in site costs.

SCHEDULE

The DFS is on track for completion in Q4 2023 with the Final Investment Decision (FID) targeted in Q1 2024. Subject to FID in Q1 2024, commissioning is forecast to commence in early 2026 with first concentrate is expected to be produced in Q3 2026.



CRITICAL MINERALS DEVELOPMENT PROGRAM GRANT FUNDING

The Company was successful in its recent application for co-funding under the Australian Government's Critical Minerals Development Program and was awarded $5.9m to assist in accelerating the Wolverine Project into production.

The Program was for a total of $48.9m which runs over three years through to 2024/25 and supports Australia's Critical Minerals Strategy whose objectives include:

- Securing investment and commercial offtake agreements for Australian projects, to increase the diversity of supply and support secure, robust supply chains.
- Grow capability to capture more of the value chain by expanding knowledge of critical minerals and moving into downstream processing.
- Supporting economic development and jobs in regional communities.

Under the terms of the Program, the minimum available amount was $1m with the maximum grant amount being $30m. As part of its application, the Company outlined three key work programs that the Company will apply to the grant funding, including:

- Resource definition drilling at NTU's Wolverine deposit, and
- Advanced Front-End Engineering and Design

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WOLVERINE DEEPS EXPLORATION DRILLING

Background

In March 2023, the Company commenced a seven (7) hole diamond drilling program (Table 1) exploring for continuations to mineralisation along strike and down dip at the Wolverine Deposit at Northern Minerals' Browns Range Heavy Rare Earths Project, to understand the plunge and grade of mineralisation at depth. In doing so, Northern Minerals is determining whether the Inferred Mineral Resource can be extended **down plunge below the current Mineral Resource wireframe** and the likely implications of this possible extension to the longevity of the project, currently being evaluated through a Definitive Feasibility Study due for completion in Q4 2023.

Table 1: Wolverine Deeps Drill Summary

Hole ID Actual	Collar East	Collar North	Collar RL	Dip	Azi	EOH Depth Actual
BRWD0067	493476	7915007	453	-73	194	532
BRWD0067W1	493476	7915007	453	-75	194	543
BRWD0068	493449	7915125	446	-67	182	601
BRWD0068W1	493449	7915125	446	-67	182	697
BRWD0069	493408	7915076	446	-59	180	582
BRWD0069W1	493408	7915076	446	-65	180	595
BRWD0069W2	493408	7915076	446	-72	180	718

Assay results have been received for the remaining 3 holes from the 7-hole programme. The first 2 assay batches from BRWD0067 and BRWD0067W1 were reported in the March 2023 Quarterly Activities Report (refer ASX Announcement - 28 April 2023). The second 2 holes, BRWD0068 and BRWD0068W1 were reported in ASX Announcement of 11 May 2023.

All significant results are reported in **Table 2**.

Table 2: Significant Intercepts[1]

Hole Number		From (m)	To (m)	Interval (m)	TREO[2] (%)	Dy2O3 (ppm)
BRWD0067		490	498	8	0.26	145
BRWD0067W1		515	530.8	15.8	0.51	454
		547	548.9	1.9	2.29	2,029
BRWD0068		589	606.6	17.57	1.96	1819
	incl	589	598.9	9.94	3.27	3048
	incl	591	596.5	5.54	5.57	5211
BRWD0068W1		621	631	10	0.19	130
	and	635	653.2	18.2	0.62	575
BRWD0069		No Significant Intercepts				
BRWD0069W1		No Significant Intercepts				
BRWD0069W2		611	616	5	0.63	159

1. Significant intercepts (>=2m @ 0.15% TREO or equivalent, with a maximum of 2m continuous internal dilution. No top-cut has been applied all widths are downhole lengths.). For completeness, 17.57m @ 1.96% TREO is reported with >=5.2m continuous internal dilution.
2. (TREO – Total Rare Earth Oxides = Sum of La2O3, CeO2, Pr6O11, Nd2O3, Sm2O3, Eu2O3, Gd2O3, Tb4O7, Dy2O3, Ho2O3, Er2O3, Tm2O3, Yb2O3, Lu2O3, Y2O3)

Discussion

Assays from holes BRWD0067 and BRWD0067W1 indicate that mineralisation is increasing as the central portion of the primary plunge is approached, with both holes appearing to have intersected the very western edge of the primary structure.

Assay and geological results from BRWD0068 and BRWD0068W1 indicate that the primary plunge has been intersected, and although the initial concept was that the primary plunge was stepping over to the west, results are indicating that the primary plunge is steeper than first thought.

The final three diamond holes were completed along a 40m step out to the west (**Figure 1**). Geologically, the primary structure identified as a mosaic to chaotic quartz-haematite breccia is present in all holes BRWD0069, BRWD0069W1and BRWD0069W2, however xenotime mineralisation is weak. This supports the interpretation that the primary plunge is to the east of this line of holes and is more steeply plunging at this depth.

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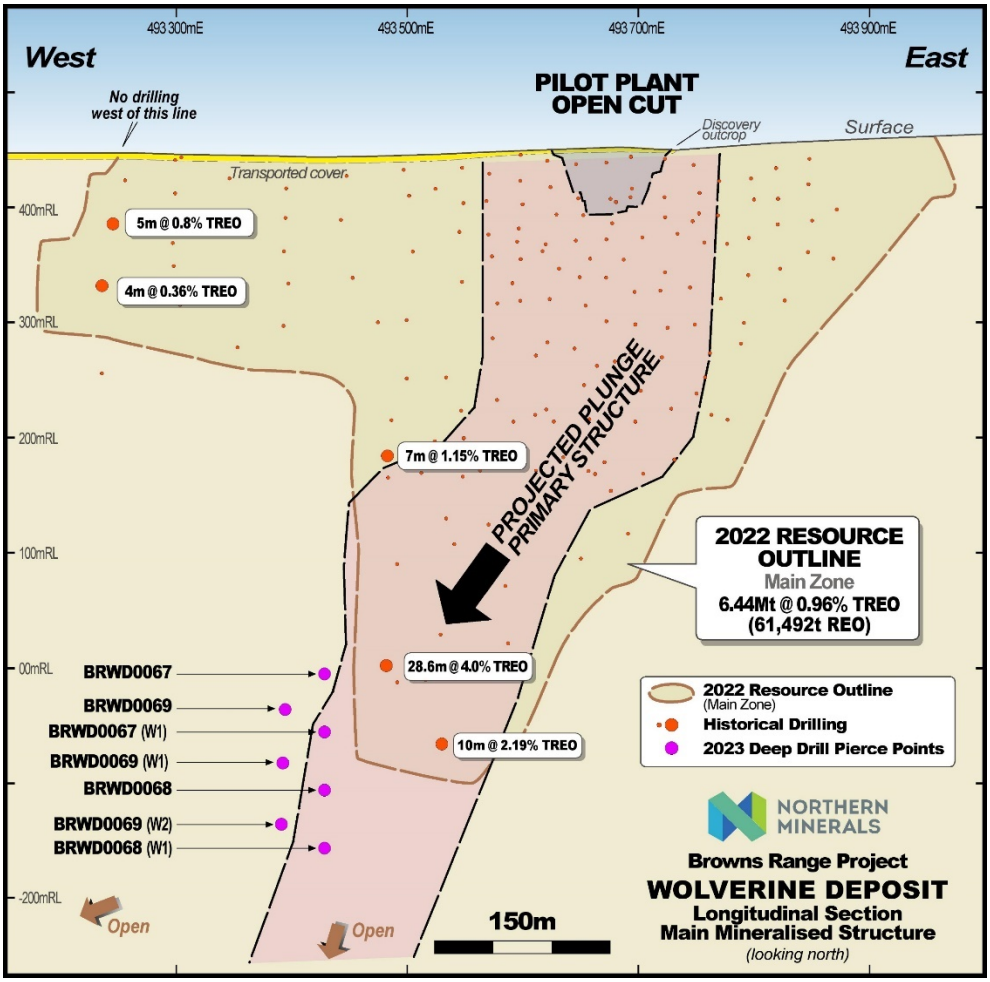

Figure 4: Wolverine Long Section with recently completed drilling in purple

Northern Territory Geophysics and Drilling Collaborations Program (Round 16)

In April 2023, the Company applied for funding for exploration drilling at its Boulder Ridge Project in the western Tanami region of the Northern Territory. Northern Minerals received notification from the Department of Industry, Tourism and Trade in June 2023, that it had been successful in its application for 50% co-funding of the proposed $320,000 diamond drilling program.

The Boulder Ridge exploration program is targeting the wide-spread REE mineralisation discovered by historical exploration and verified by Northern Minerals between 2011 and 2015. This mineralisation has never been drill-tested, despite some high-grade rock chips. Further mapping in early 2022 has identified fault vein breccias developed along N-S and E-W trending shear zones, similar to Wolverine. These shear zones are mineralised with rock chip results up to 3.3% TREO returned, defining a continuous strike extent of 1.3km with rock chips >1% TREO.

Expenditure on exploration and evaluation activities during the quarter was approximately $2.2 million.

PROJECT FUNDING

The Company continued to progress its project funding work program during the June 2023 quarter including engagement with commercial and Commonwealth Government financiers to secure debt finance to support the Browns Range HRE Project.

During the quarter Northern Australia Infrastructure Facility (NAIF) confirmed that the Project has fulfilled the strategic assessment phase of NAIF's investment decision process and that NAIF will now advance to

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detailed due diligence. Northern Minerals will continue to work closely with NAIF during the due diligence phase to develop an Investment Proposal for the NAIF Board to consider an Investment Decision, which is required for NAIF to offer any loan or financial assistance. At this stage, NAIF has not made any decision to offer finance nor made any commitment to provide any financing and there is no certainty that an agreement will be reached between the parties.

In addition, the Company continues dialogue with Export Finance Australia surrounding its potential involvement in the provision of debt funding for the development of the Project.

As part of its debt funding program, the Company appointed ICA Partners as its principal Financial Advisor in relation to the project financing of the Browns Range Rare Earths Project. ICA Partners is one of Australia's leading boutique advisory firms having carved a niche as experts in the infrastructure, energy and natural resources sectors, and trusted independent advisor to ASX100 companies, governments, superannuation funds and developers across our industry sectors. ICA Partners were advisor to Iluka Resources on the A$1.25bn financing of the Eneabba Rare Earths Refinery (Phase 3) in Western Australia in 2022.

Payments to related parties of the entity and their associates

Payments made during the Quarter and included in 6.1 and 6.2 of Appendix 5B – Mining exploration entity quarterly cash flow report are detailed below:

Aggregate amount of payments to related parties and their associates included in cash flows from operating activities total $0.328 million.

This comprises of payments to Executive and Non-executive directors' remuneration from services. There were no payments to related parties and their associates included in cash flows from investing activities.

Compliance Statement – Exploration Results

The information in this report relating to Exploration Results was compiled by Mr Simon Pooley who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Pooley is a full-time employee of Northern Minerals Limited and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (the JORC Code). Mr Pooley consents to the inclusion of this information in the form and context in which it appears.

Authorised by The Board of Directors of Northern Minerals Limited

For further information:
Northern Minerals
Nicholas Curtis – Executive Chairman
+61 411 425 784

For media and broker enquiries:
Jane Morgan Management
Jane Morgan – Investor Relations Manager
+61 405 555 618

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Future Performance and Forward-Looking Statements

This Report contains certain "forward-looking statements". The words "expect", "anticipate", "estimate", "intend", "believe", "guidance", "should", "could", "may", "will", "predict", "plan" and other similar expressions are intended to identify forward-looking statements. Any indications of, and guidance on, future earnings and financial position and performance are also forward-looking statements. Forward-looking statements, opinions and estimates provided in this Report are based on assumptions and contingencies that are subject to change without notice and involve known and unknown risks and uncertainties and other factors that are beyond the control of Northern Minerals, its directors and management including any further impacts of COVID-19 on Northern Minerals' continued trading and operations. This includes statements about market and industry trends, which are based on interpretations of current market conditions.

You are strongly cautioned not to place undue reliance on forward-looking statements, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption caused by factors including the COVID-19 pandemic.

Forward-looking statements are provided as a general guide only and should not be relied upon as an indication or guarantee of future performance. Actual results, performance or achievements may differ materially from those expressed or implied in such statements and any projections and assumptions on which these statements are based. These statements may assume the success of Northern Minerals' business strategies, whether the success is realised in the period for which the forward-looking statement may have been prepared or otherwise. No representation or warranty, express or implied, is made as to the accuracy, likelihood of achievement or reasonableness of any forecasts, prospects, returns or statements in relation to future matters contained in this Report. The forward-looking statements are based on information available to Northern Minerals as at the date of this Report. Except as required by law or regulation (including the ASX Listing Rules), none of Northern Minerals, its representatives or advisers undertakes any obligation to provide any additional or updated information whether as a result of a change in expectations or assumptions, new information, future events or results or otherwise.

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About Northern Minerals

Northern Minerals Limited (ASX: NTU) (Northern Minerals or the Company) owns 100% of the Browns Range Heavy Rare Earths (HRE) Project in northern Western Australia, tenements uniquely rich in the heavy rare earth elements dysprosium (Dy) and terbium (Tb).

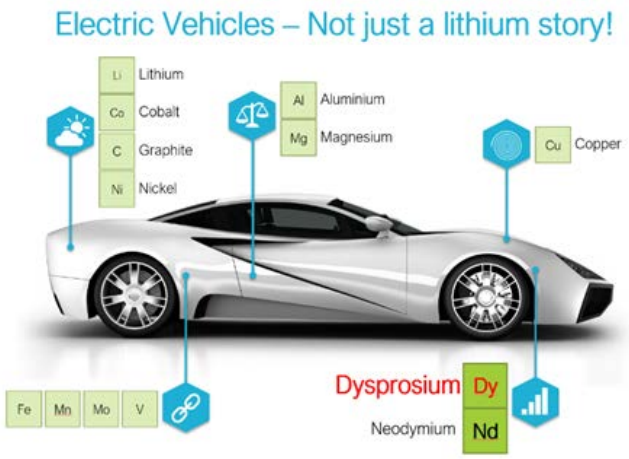
Dysprosium and terbium are critical in the production of dysprosium neodymium iron-boron (DyNdFeB) magnets used in clean energy, military, and high technology solutions. Dysprosium and terbium are prized because their unique properties improve the durability of magnets by increasing their resistance to demagnetisation.

The Project's flagship deposit is Wolverine, which is thought to be the highest-grade dysprosium and terbium orebody in Australia. The Company is preparing to bring Wolverine into production with the objective of providing a reliable alternative source of dysprosium and terbium to production sourced from China. Northern Minerals is one of only a few companies outside of China to have produced these heavy rare earth elements.

To further its strategic objective, Northern Minerals is undertaking a Definitive Feasibility Study for a commercial scale beneficiation plant to process Wolverine ore.

Apart from Wolverine, Northern Minerals and has several other deposits and prospects within the Browns Range Project that contain dysprosium and other heavy rare earth elements, hosted in xenotime mineralisation.

For more information: northernminerals.com.au.



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TENEMENT REPORT

Details of mining tenements as at the quarter ended 30 June 2023 (ASX Listing Rule 5.3.3).

.Project	Location	Tenement ID	State	Status	Holder Application	Interest
Browns Range WA	Browns Range	E80/4479	WA	Granted	Northern Minerals	100%
	Browns Range	E80/4782	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5040	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5041	WA	Granted	Northern Minerals	100%
	Browns Range	M80/627	WA	Granted	Northern Minerals	100%
	Browns Range	M80/649	WA	Application	Northern Minerals	100%
	Browns Range	L80/76	WA	Granted	Northern Minerals	100%
	Browns Range	L80/77	WA	Granted	Northern Minerals	100%
	Browns Range	L80/78	WA	Granted	Northern Minerals	100%
	Browns Range	L80/79	WA	Granted	Northern Minerals	100%
	Browns Range	L80/107	WA	Application	Northern Minerals	100%
	Browns Range	E80/5260	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5261	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5367	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5368	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5369	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5370	WA	Granted	Northern Minerals	100%
	Browns Range	E80/5418	WA	Granted	Northern Minerals	100%
Browns Range NT	Browns Range	EL24193	NT	Granted	Northern Minerals	100%
	Browns Range	EL24174	NT	Granted	Northern Star Resources	REE rights only
	Browns Range	EL26270	NT	Granted	Northern Minerals	100%
	Browns Range	EL26286	NT	Granted	Northern Minerals	100%
	Browns Range	ELA32161	NT	Application	Northern Minerals	100%

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.Project	Location	Tenement ID	State	Status	Holder Application	Interest
	Browns Range	ELA32162	NT	Application	Northern Minerals	100%
John Galt	John Galt	E80/4298	WA	Granted	Northern Minerals	100%
	John Galt	E80/4967	WA	Granted	Northern Minerals	100%
	John Galt	E80/5070	WA	Granted	Northern Minerals	100%
	John Galt	E80/5230	WA	Granted	Northern Minerals	100%
Boulder Ridge	Boulder Ridge	EL29594	NT	Granted	Northern Minerals	100%
	Boulder Ridge	ELA24849	NT	Application	Northern Minerals	100% (excluding gold rights)
	Boulder Ridge	ELA24935	NT	Application	Northern Minerals	100% (excluding gold rights)
	Boulder Ridge	EL24177	NT	Granted	Northern Minerals	100%
	Boulder Ridge	EL25171	NT	Granted	Northern Star Resources	REE rights only
	Boulder Ridge	ELA28868	NT	Application	Northern Star Resources	REE rights only
	Boulder Ridge	EL27590	NT	Granted	Northern Star Resources	REE rights only
Gardiner-Tanami NT	Tanami	EL23932	NT	Granted	Northern Star Resources	REE rights only
	Tanami	EL25009	NT	Granted	Northern Star Resources	REE rights only
	Ware Range	EL26498	NT	Granted	Northern Minerals	100%
	Ware Range	EL26541	NT	Granted	Northern Minerals	100%
	Pargee	EL27367	NT	Granted	Northern Minerals	100%
	Tanami	EL29592	NT	Granted	Northern Star Resources	REE rights only
	Tanami	EL29593	NT	Granted	Northern Star Resources	REE rights only
	Tanami	EL29595	NT	Granted	Northern Minerals	100%
	Tanami	ELA29619	NT	Application	Northern Star Resources	REE rights only
	Tanami	EL26635	NT	Granted	Northern Star Resources	REE rights only

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.Project	Location	Tenement ID	State	Status	Holder Application	Interest
	Tanami	ELA32163	NT	Application	Northern Star Resources	REE rights only
	Tanami	ELA32164	NT	Application	Northern Star Resources	REE rights only
Rabbit Flats	Rabbit Flats	ELA25159	NT	Application	Northern Star Resources	REE rights only
	Rabbit Flats	ELA25160	NT	Application	Northern Star Resources	REE rights only

The Company neither had granted nor relinquished any mining tenements in the quarter. No farm-in or farm-out agreements were entered into during the quarter.

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Section 1 - Sampling Techniques and Data

Criteria	JORC Code Explanation	Commentary
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.*	A total of 7 diamond holes were drilled at the Wolverine deposit during the quarter. All assay results have been received. In the field a portable XRF handheld tool was used to provide a preliminary indication of mineralisation. A reading time of 30 seconds was used, with spot readings taken
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	The diamond drill holes sampled and assayed were NQ2 sized core. The pXRF instrument is calibrated and serviced annually or more frequently. Additionally, at the start of each sampling session, standards and silica blanks are analysed. Sampling was carried out under NTU protocols and employed QAQC procedures in line with industry standard practice and fit for purpose.
	Aspects of the determination of mineralisation that are Material to the Public Report.	This report relates to exploration results only. Sampling was undertaken at a nominal 1m interval, although geologist's discretion to constrain samples on observed geological intervals was also used. Diamond core samples were dried, crushed, split and pulverised by Intertek Genalysis Laboratories in Perth prior to analysis of the rare earth element suite using a sodium perioxide fusion digest and ICP-MS..
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*	Diamond core was drilled using either NQ2 diameter. Diamond core was orientated using the Reflex ACT orientation tool.

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	tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).	
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Diamond core is reconstructed into continuous runs on an angle iron cradle for orientation marking. Depths are checked against the depth given on the core blocks and rod counts are routinely carried out by the drillers. Recovered core was measured and compared against driller's blocks Diamond recovery is measured by measuring the recovered core and comparing to the drilled interval.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Diamond drilling utilised triple tube techniques and drilling fluids in broken or fractured ground in order to assist with maximising recoveries. Competent ground was drilled using standard NQ2.
	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 known relationship exists.
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.*	Diamond core was geologically and geotechnically logged using predefined lithological, mineralogical and physical characteristics (such as colour, weathering, fabric) logging codes. The information collected is sufficient to support mineral resource estimation, mining studies, metallurgical studies.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging was generally qualitative in nature except for the determination of core recoveries and geotechnical criteria such as RQD and fracture frequency which was quantitative. Core photos were collected for all diamond drilling.
	The total length and percentage of the relevant intersections logged.	All diamond drill core metres were logged and entered into the database
Sub-sampling techniques and	*If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*	Diamond core was cut in half using an electric core saw. Sample intervals were marked on the core by the responsible geologist considering lithological and structural features, together with indicative results from handheld XRF measurements. Core selected for duplicate analysis was further cut to quarter core with both quarters submitted

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		individually for analysis. Where possible, core was sampled to leave the orientation line in the core tray.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	The sample preparation techniques employed for the samples follow industry standard practice at Intertek Genalysis Laboratory. Samples are oven dried, crushed if required and pulverised prior to a pulp packet being removed for analysis.
Sample preparation	*Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*	Field QAQC procedures included the field insertion of certified reference materials (standards) having a range of values reflecting the general spread of values observed in the mineralisation. Blanks were also inserted in the field and developed from local host rock following chemical analysis. Field duplicates were collected by taking quarter core splits. Insertion rates targeted 1:20 for duplicates, blanks and standards, with increased frequency in mineralised zones.
	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.	Field duplicates were obtained from quartering the core. Insertion rates targeted 1:20 for duplicates, blanks and standards, with increased frequency in mineralised zones.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sample is appropriate for the grain size of the material.
	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	Samples assayed by Genalysis for rare earth elements were fused with sodium peroxide within a nickel crucible and dissolved with hydrochloric acid for analysis. Fusion digestion ensures complete dissolution of the refractory minerals such as xenotime, which are only partially dissolved if the pulp is digested in acids. The digestion solution, suitably diluted, is analysed by ICP Mass Spectroscopy (ICP-MS) for the determination of the REE (La – Lu) plus Y, Th and U.
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the	In the field a portable XRF handheld tool was used to provide a preliminary quantitative indication of mineralisation. A reading time of 30 seconds was used. With diamond core, up to 4-point readings were recorded every metre. Daily checks on the PXRF are

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	analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	completed with the silica blank standard and the TILL-4 yttrium standard checked at the beginning of every sample run.
Quality of assay data and laboratory tests	*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.*	Certified reference materials, using values across the range of mineralisation, were inserted blindly and randomly. Insertion rates targeted 1:20 for duplicates, blanks and standards, with increased frequency in mineralised zones Results highlight that sample assay values are suitably accurate and unbiased. Blanks were inserted in the field and developed from local host rock following chemical analysis. Laboratory QAQC involves the use of internal lab standards using certified reference material, blanks, splits and replicates as part of the in-house procedures.
	The verification of significant intersections by either independent or alternative company personnel.	Internal verification of significant results by more than one company geologist.
Verification of sampling and assay	*The use of twinned holes.*	No holes have been twinned in this program.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Primary data was collected into a proprietary logging package (OCRIS) with in-built validation. Details were extracted and pre-processed prior to loading. Datashed is used as the database storage and management software and incorporates numerous data validation and integrity checks, using a series of defined data loading tools. Data is stored on a SQL server by Northern Minerals Ltd subject to electronic backup. All data was checked by the responsible geologist and digitally transferred to Perth. Datashed is used as the database storage and management software and incorporates numerous data validation and integrity checks using a series of defined data loading tools. Data is stored on a SQL server and electronic backups completed three times per day.
	Discuss any adjustment to assay data.	The assay data were converted from reported elemental assays for a range of elements to the equivalent oxide compound as applicable to rare earth oxides. Oxide calculations are completed by the laboratory and checked by Northern Minerals.

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		No issues were identified. The oxides were calculated from the element according to the following factors below: CeO_2 –1.2284, Dy_2O_3 – 1.1477, Er_2O_3 – 1.1435, Eu_2O_3 – 1.1579, Gd_2O_3 – 1.1526, Ho_2O_3 – 1.1455, La_2O_3 – 1.1728, Lu_2O_3 – 1.1371, Nd_2O_3 – 1.1664, Pr_6O_{11} – 1.2082, Sm_2O_3 – 1.1596, Tb_4O_7 – 1.1421, Tm_2O_3 – 1.1421, Y_2O_3 – 1.2699, Yb_2O_3 – 1.1387
	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.	Drill collar locations have been surveyed with a high accuracy KGPS receiver with an accuracy of +/- 0.02 metres. Down hole surveys were completed by the drilling contractor using a AXIS Champ gyroscope survey tool at the time of drilling.
Location of data points	*Specification of the grid system used.*	The grid system used is MGA94 Zone 52. All reported coordinates are referenced to this grid.
	Quality and adequacy of topographic control.	Topographic control is based on airborne digital terrain survey data collected in 2011 with accuracy considered to be +/-1m.
	Data spacing for reporting of Exploration Results.	Nominal 40m east-west drill lines with holes spaced at 50m intervals vertically on each line.
Data spacing and distribution	*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.*	Exploration Results only. Data spacing and distribution is currently not yet sufficient to support Mineral Resource or Ore Reserve Estimation.
	Whether sample compositing has been applied.	N/A
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.*	All diamond drilling completed at Wolverine is at an orientation perpendicular to the interpreted structural and/or lithological trend.
	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.	Mineralisation at the Wolverine deposit has an east-west strike and dips steeply north. Current knowledge indicates that the orientation of drilling with respect to overall structural and lithological trends is not expected to introduce any sampling bias.

Sample security	*The measures taken to ensure sample security.*	Samples are collected on site under supervision of the responsible geologist and stored in bulk bags on site prior to transport to Perth by a commercial transport company. The samples are stored in a secure area until loaded and delivered to the Intertek Genalysis laboratory in Perth.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits/reviews have been conducted.

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Section 2: Reporting of Exploration Results

Criteria	JORC Code Explanation	Commentary

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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 interests, historical sites, wilderness or national park and environmental settings.*	The Wolverine Deposit is located on M80/627. The tenement is located in the company's Browns Range Project approximately 150 kilometres south-east of Halls Creek and adjacent to the Northern Territory border in the Tanami Desert. Northern Minerals owns 100% of all mineral rights on the tenement. The fully determined Jaru Native Title Claim is registered over the Browns Range Project area and the fully determined Tjurabalan claim is located in the south of the project area.
	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 tenements are in good standing and no known impediments exist.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	No previous systematic exploration for REE mineralisation has been completed by other parties prior to Northern Minerals at Wolverine. Regional exploration for uranium mineralisation was completed in the 1980s without success.
Geology	*Deposit type, geological setting and style of mineralisation.*	The Browns Range deposits including Wolverine are unconformity related HREE style deposits. They are located on the western side of the Browns Range Dome, a Paleoproterozoic dome formed by a granitic core intruding the Paleoproterozoic Browns Range Metamorphics (meta-arkoses, feldspathic meta-sandstones and schists) and an Archaean orthogneiss and schist unit to the south. The dome and its aureole of metamorphics are surrounded by the Mesoproterozoic Gardiner Sandstone (Birrindudu Group). The Browns Range xenotime mineralisation is typically hosted in hydrothermal quartz and hematite veins and breccias within the meta-arkoses of the Archaean Browns Range Metamorphics. Various alteration styles and intensities have been observed; namely silicification, sericitisation and kaolinite alteration.
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:*	See Table 1 in body of text.

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	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.*	
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 stated.*	Significant intervals were tabulated downhole for reporting. Each metre downhole was analysed using sodium fusion ICP-MS. All individual metres (one result per metre) were averaged over the entire tabulated range. A lower cut-off of 0.15% TREO was used during data aggregation, allowing for 2m of internal dilution. No top-cuts have been applied.
	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.	All intervals were initially based on 1m sample runs but are constrained to geological and mineralisation contacts. The geologist then qualitatively grouped contiguous mineralised runs together and the average analysis of the entire run is reported here.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalents values are used for reporting of exploration results.
Relationship between mineralisation widths and intercept lengths	*If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*	The drilling is designed to intersect at an azimuth approximately perpendicular to the strike of mineralisation. The geometry of mineralisation at the Wolverine Deposit has an east-west strike and dips approximately 75 degrees north.
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.*	Refer to Figures 4, in the body of text.

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Balanced reporting	*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.*	Previous exploration results are the subject of previous reports. The results of all drill holes have been reported. Where holes were not reported with significant intercepts there were no significant 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.*	At Browns Range Project WA, airborne magnetic and radiometric surveys were acquired by Northern Minerals in 2011. Hyperspectral data captured during October 2012 by Hyvista Corporation Pty Ltd. Very high resolution "Ultracam" aerial photography was captured by Hyvista during the Hyperspectral survey. Regional reconnaissance including geological mapping, rock chip sampling and also geochemical soil sampling completed over all the prospects reported herein. Ground based radiometric surveys were also completed. Several Mineral Resource estimates have been completed for the Wolverine deposit between 2012 and 2022. Comprehensive metallurgical test work has been undertaken since 2010 allowing the successful development of a process flowsheet incorporating beneficiation and hydrometallurgy circuits. A trial mine and pilot plant operation, including ore extracted from Wolverine, was undertaken between 2017 and 2022 to demonstrate proof of concept of the flowsheet and de-risk the project. Geotechnical studies by external consultants have been undertaken on diamond core from Wolverine between 2013 and 2023 in support of mine planning for open pit and underground operations.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Further drilling will be conducted in H2 2023 to the east to the recently completed drilling to define an Inferred Mineral Resource below the current wireframe.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and	Refer to Figures 4 in body of text.

	future drilling areas, provided this information is not commercially sensitive.	

Section 3: Estimation and Reporting of Mineral Resources

Not applicable

Section 4: Estimation and Reporting of Ore Reserves

Not applicable

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