ASX ANNOUNCEMENT
13 September 2021

Ore sorter system commissioned and tested on Wolverine and Banshee

Highlights

- Bulk sample test completed on 4,479 tonnes of ore from Wolverine, the largest orebody at Browns Range
- Tests results show a 45% grade increase to the mill and over 95% TREO recovery when feeding a 0.9% TREO Wolverine ore to the ore sorter circuit.
- Bulks sample tests have highlighted additional key factors to consider for ore sorting that are not apparent from small scale tests.
- Initial ore sorting tests on Banshee material shows amenability to sorting, with further testwork planned.
- Effective sorting of the lower grade Banshee material has potential to increase the Browns Range Mineral Ore Reserve estimate

Figure 1: Operational ore sorter system

Australian heavy rare earths producer, Northern Minerals Limited (ASX: NTU) (the **Company**) is pleased to announce that it has progressed its ore sorting project enhancement initiative with the commissioning and testing of the sorter system and is now producing ore sorted material and converting this to a 30% TREO concentrate in its' Browns Range beneficiation plant.

Northern Minerals' CEO, Mark Tory, said "*The construction, commissioning and testing of the ore sorter circuit marks another milestone in the development of the Browns Range Project.*

"The positive bulk sample tests confirm the effectiveness of the ore sorting circuit on the Wolverine ore to significantly increase the head grade to the mill which is expected to result in higher production rates and lower operating costs for a full scale operation at Browns Range.

"It's also pleasing to see the initial ore sorting tests the Banshee ore showing promise which, if shown to be effective in future tests, has potential to significantly increase the Browns Range Mineral Resource Estimate.

"Being able to test and operate the ore sorting circuit in conjunction with the pilot beneficiation plant is providing extremely valuable data that you just can't get from small bench scale tests and this will feed into our feasibility study for a potential commercial scale heavy rare earth operation at Browns Range".

The ore sorter system was constructed during 2020 and 2021 and commissioned in June 2021.The sorter that was installed is a 2m wide Steinert sorter that uses X-ray Transmission (XRT) and laser detectors to identify rare earth mineralisation.

The sorter has been run over two test campaigns which included 41 test runs processing 5,300 tonnes of ore from the ROM stockpiles largely coming from Wolverine ore, and 5 test runs on Banshee ore that was bulk sampled from a surface costean that provided 285 tonnes of Banshee ore.

Figure 2: Feeder with simultaneous feed of two size fractions of ore to the ore sorter machine

The tests have confirmed that simultaneous sorting of two size fractions is possible on the sorter, allowing a single machine to sort both sortable size fractions (10mm-25mm and 25mm-75mm)

The sortable fraction (>10mm material) of Wolverine ore can be successfully sorted (90% Total Rare Earth Oxide (TREO) recovery in 50% of the mass) and when combined with non-sortable fines achieves a 45% grade increase to the mill and over 95% TREO recovery when feeding a 0.9% TREO ore

The sorter system is now being run to produce feed for the beneficiation plant and 4,479 tons of Wolverine ore have been processed through the ore sorter circuit to end August. Processing of the Wolverine ore sorted material in the beneficiation plant has resulted in better recoveries in the magnetic separation plant and flotation plant compared to feeding unsorted ore. A bulk sample of 50 tonnes of 30% TREO rare earth concentrate has being produced for test work by facilities identified with likely future capability and capacity to process the heavy rare earth xenotime concentrate produced at Browns Range.

Bulks sample tests have highlighted some key factors to consider for ore sorting that cannot be determined at bench scale using vendor equipment in laboratory settings. Understanding the impact of these factors is critical to including an ore sorting circuit in a full scale processing facility.

Initial sorting tests of the Banshee ore have shown that the highly oxidised surface material contains a large fines fraction and that the grade of the sortable fraction (i.e. >10mm) can be doubled recovering more than 60% of the TREO in 25% of the mass. An additional bulk sample is being extracted from deeper in the costean and three diamond drill holes are being drilled for further test work.

The bulk ore sorting testwork is a key input for the full scale beneficiation plant feasibility study currently underway which will also leverage off the substantial technical, operational and economic data from the R&D testwork at the Pilot Plant since 2018.

Authorised by Mark Tory -CEO

Compliance Statement - Ore Sorting Test Work

The information in this report that relates to ore sorting test work is based on information compiled by Mr Louis de Klerk (Pr Eng, B.Sc Chem Eng, Post Grad Dip in Advanced Process Design), a Competent Person who is a professional engineer and Member of the Australasian Institute of Mining and Metallurgy. Mr de Klerk is a full time employee of the company. Mr de Klerk has sufficient experience that is relevant to the style of mineralisation and the type of metallurgy 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 Resources and Ore Reserves'. Mr de Klerk consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

For further information:
Mark Tory
CEO
Northern Minerals
+61 8 9481 2344

For media and broker enquiries
Michael Cairnduff
Cannings Purple
0406 775 241
mcairnduff@canningspurple.com.au

About Northern Minerals:

Northern Minerals Limited (ASX: NTU) (Northern Minerals or the Company) is one of a few producers of heavy rare earth element Dysprosium outside of China via production from the Browns Range Heavy Rare Earth pilot plant project in northern Western Australia.

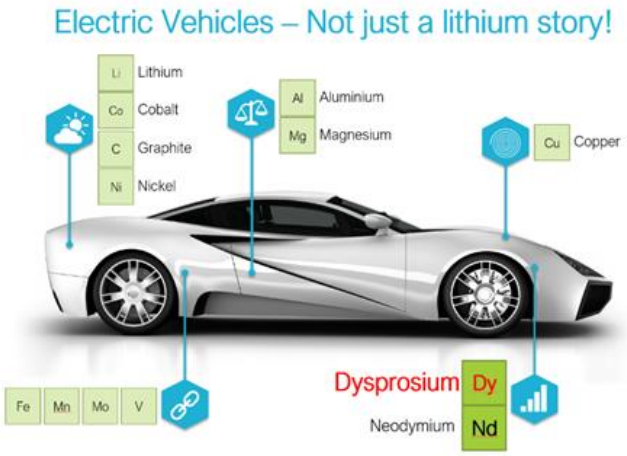
The Company commenced the production of heavy rare earth carbonate in late 2018 as part of pilot assessment of economic and technical feasibility of a larger scale development at Browns Range. An ore sorter was installed and commissioned during 2021 which will also be tested for its economic and technical feasibility at the front end of the pilot plant.

Through the development of its flagship project, the Browns Range Project (the Project), Northern Minerals aims to build the Western Australian operation into a significant world producer of dysprosium outside of China.

The Project is 100% owned by Northern Minerals and has several deposits and prospects containing high value dysprosium and other HREs, hosted in xenotime mineralisation.

Dysprosium is an essential ingredient in the production of DyNdFeB (dysprosium neodymium iron-boron) magnets used in clean energy, military and high technology solutions.

For more information: northernminerals.com.au.



ASX Code:	NTU	Market Capitalisation:	A$203.5m
Issued Shares:	4,846m	Cash (as at 30 June 2021)	A$19.9m

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JORC TABLE ONE : ORE SORTING

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.*	• This report relates to ore sorting of material obtained from ROM stockpiles of ore mined from the Gambit West and Wolverine open pits in 2017 and on material from the surface costean of the Banshee deposit . • The work on the Wolverine ore has processed 4,479 tonnes and this is expected to be representative of the high grade portion of Wolverine ore mined from the open pit mine and placed on the ROM stockpile. Lesser bulk quantities of Gambit West ore stockpile were processed and are not representative of the stockpile of that ore type. Preliminary test work on samples obtained from a surface costean of the Banshee deposit are not expected to be representative of Banshee deposit.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).*	• Not applicable to this announcement.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Not applicable to this announcement.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or*	• Not applicable to this announcement.

Criteria	JORC Code explanation	Commentary
	costean, channel, etc) photography. • *The total length and percentage of the relevant intersections logged.*	
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• Refer to Sampling techniques.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• Assay for individual rare earths, yttrium and gangue components were completed by the Northern Minerals laboratory on the mine site. • Samples were analysed via XRF/ICP-MS for P_2O_5, SiO_2, Fe_2O_3, Al_2O_3, Y_2O_3, U_3O_8, ThO_2, TiO_2, MnO, SO_3, MgO, CaO, K_2O, Na_2O, V_2O_5, Cr_2O_3, CoO, NiO, CuO, ZnO, As_2O_3, PbO, BaO, Cl, SrO, ZrO_2, Sb_2O_3, SnO_2, LOI_{1000}, La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3 and Sc_2O_3. • The laboratory followed QA/QC procedures, compared results to standards and did duplicate analyses.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Samples of the ore sorter circuit products were crushed on site to 6mm and split using riffle splitters to obtain representative samples for analysis. • No adjustment was made to any analytical data

Criteria	JORC Code explanation	Commentary
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Bulk ore samples were taken from the ROM pad stockpiles at the Browns Range pilot plant. • Test campaigns were run on the ore sorter circuit and samples were taken, at several points in the process, by automated sampling devices, and at several times during each of the test campaigns in order to obtain representative samples
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• Not applicable to this announcement.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• Not applicable to this announcement.
Sample security	• *The measures taken to ensure sample security.*	• Samples were collected in, marked containers and transferred by the metallurgy team to the on-site laboratory. Sample identifications were checked before the analytical sample preparation and analysis.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• Each ore sorting test was managed by Northern Minerals metallurgical staff

Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	
Mineral tenement and	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint*	• The Browns Range pilot plant operation, including the Gambit West and Wolverine Open pits, is located wholly within Mining Licence

Criteria	JORC Code explanation	
land tenure status	*ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	M80/627. The tenement is located in the company's Browns Range Project approximately 160 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 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. A co-existence agreement has been signed with the Jaru Native Title Claimant group which has facilitated the granting of Mining Licence M80/627. • The tenement is 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 at the Gambit West and Wolverine deposits. A limited amount of exploration for REE mineralisation was completed by PNC at Area 5 in the 1980s including shallow drilling and trenching. Regional exploration for uranium mineralisation was completed in the 1980s by PNC and in the 2000s by Areva.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Browns Range Project is 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.

Criteria	JORC Code explanation	
		• Locally at Wolverine the hosting Browns Range Metamorphics are a variable sequence of meta quartz-lithic and arkosic arenites and conglomerates with minor interbedded schists. The host rocks in the mineralised zone are silicified and brecciated along structures trending approximately east-west and dipping steeply to the north. Hematite and sericite alteration are associated with mineralisation. The style of mineralisation is xenotime hydrothermal breccia. Xenotime is associated with varying degrees of veining and brecciation; from 1mm to 2mm crackle vein selvages to matrix infill in 5m wide zones of chaotic breccia. There are open spaced textures, vugs and minor crosscutting quartz, pyrite and barite veins that are interpreted to post-date mineralisation • The host structure at Gambit West is interpreted as a fault breccia characterised by the presence of sericite, hematite and silicification. The host structure, which occurs within a meta-arenite of the Browns Range Metamorphics package, strikes approximately east-west and is sub-vertical with a slight northerly dip. Mineralisation is related to the presence of hydrothermal xenotime, a rare earth phosphate mineral, and is predominantly associated with zones of hematite alteration. • Mineralogical examination at both deposits shows the heavy rare earth mineralisation is xenotime (YPO4). The Florencite ((Nd,La,Ce)Al3(PO4)2(OH)6) - Goyazite (Sr Al3(PO4)2(OH)5.H2O) series are the only other rare earth element minerals recognised to date. • Locally at Banshee, host rocks are mainly quartz arenites dipping approximately 45 degrees to the southwest. HREE mineralisation occurs within veins and breccias parallel with bedding.

Criteria	JORC Code explanation	

Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*
	  ○ *easting and northing of the drill hole collar*
	  ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
	  ○ *dip and azimuth of the hole*
	  ○ *down hole length and interception depth*
	  ○ *hole length.*
	• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• Not applicable to this announcement.

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.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• As there were only single samples taken for each sorting experiment there were no data aggregation methods used.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Not applicable to this announcement.
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.*	• Not applicable to this announcement.

Criteria	JORC Code explanation	
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.*	• The heavy rare earths – Dy, Tb and Lu – are recovered to a higher extent (~90%) compared to the lighter rare earths Nd (82%) and Pr (75%). • The beneficiation process using magnetic separation is based on recovering the xenotime mineralisation (>85% recovery) and recovers the light rare earths (La, Ce, Nd and Pr) to a lesser extent of 45-50% than that of the heavier rare earths. This loss of lighter rare earths is mirrored in the ore sorting process, which also targets the more dense xenotime. It has not yet been proven, but it is hypothesised that the lower recovery of light rare earths in the ore sorting is the part of the light rare earths not associated with xenotime, which would have been lost in magnetic separation in the beneficiation process.
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.*	• Not applicable to this announcement.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Not applicable to this announcement.

Section 3 Estimation and Reporting of Mineral Resources

Section 3 not applicable to this announcement.