ASX ANNOUNCEMENT
11 October 2018

Ore sorting study shows potential to double the mill feed grade on Browns Range heavy rare earth stockpiles

Highlights

- Northern Minerals proposes to introduce ore sorting technology to boost Browns Range pilot plant production profile and economics
- Technology tested on the Wolverine high-grade stockpile has demonstrated the potential to double the mill feed grade
- Capital cost estimate of $4 million

Australian heavy rare earths producer, Northern Minerals (ASX: NTU) (the Company) is pleased to announce a further production and processing update for the Browns Range Pilot Plant Project (the Project) in northern Western Australia, designed to capture additional value from existing stockpiles.

The Company has investigated using ore sorting on the five stockpiles at Browns Range to improve beneficiation and feed to the processing facility, which will in turn result in an increase in the amount of rare earth oxides that can be produced by the recently commissioned pilot plant.

Northern Minerals' Managing Director and CEO, George Bauk, said "We have successfully produced mixed rare earth carbonate from our Browns Range pilot plant and are working towards the technical and economic feasibility of the Project. Today's announcement, which demonstrates the potential to double the mill feed grade through ore sorting, has many positive benefits."

Figure 1: Planned location of the ore sorter at the Browns Range Pilot Plant.

“Ore sorting technology is readily available through a number of providers and our studies on the five existing ROM stockpiles have shown the potential for significant improvements in both processing plant efficiency and value recovery of heavy rare earth elements through its use.

“We believe the up-front capital cost of retrospectively installing ore sorting technology ahead of the existing Brown Range Pilot Plant circuit is justified in light of the head grade improvement demonstrated in the testwork to date, along with the forecast economic benefits delivered by greater production output – both of which will flow-through to additional medium-term value for shareholders.”

“We are currently working on the more testwork, approvals, planning and the funding required for ore sorting at Browns Range with a view to have ore sorting installation in Q2 2019.

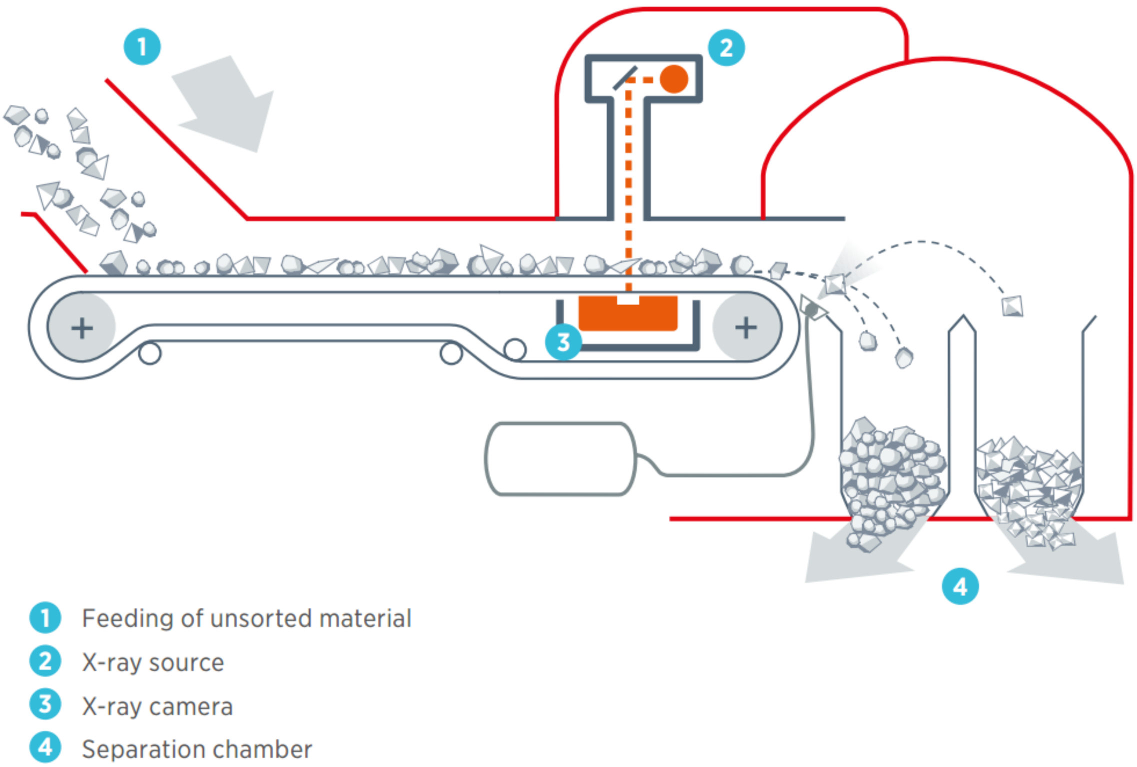

Figure 2: A typical sorting schematic, in this case based on the Tomra technology

The rare earth content in the Browns Range ore is contained mostly in the mineral xenotime, a yttrium phosphate mineral. Xenotime is a paramagnetic mineral that allows the ore to be beneficiated using magnetic separation, but it is also a dense mineral that allows sorting by density. X-ray transmission (XRT) sensors are able to differentiate between the high-density xenotime containing ore and lower density gangue minerals.

Ore sorting tests have been completed on sample ore from each of the stockpiles currently on the ROM pad at Browns Range. Some key findings include:

- Preliminary sorting tests on small bucket sized samples (3kg to 20kg) have been completed on material screened into the two sortable fractions of 10-25mm and 25-75mm from each stockpile. The samples, which are not expected to be representative of the stockpiles, included high and medium grade material from each of the Wolverine and Gambit orebodies, as well as material from a mixed low grade stockpile.
- The preliminary sorting test results were all positive, showing that sorting using XRT will be able to upgrade all the stockpile material significantly.
- More comprehensive testwork has been undertaken on the Wolverine High Grade stockpile, where a bulk sample of approximately 100 tonnes was collected and crushed using the in-situ mine site crusher. The crushed bulk sample was subsampled, and a 2.5 tonne sample was wet screened into four fractions: fines (<10mm); 10-25mm; 25-75mm and oversized (>75mm). The sortable fractions (10-25mm and 25-75mm) were split and sorted on Tomra and Steinert sorters using XRT technology.
- The comprehensive sorting tests of the two sortable fractions showed that both the Tomra and Steinert technology was able to successfully sort the Wolverine high-grade ore stockpile using XRT technology.

Figure 3: Typical on-site sorting layout (Steinert sorting machine in the centre)

The recovery data for the Wolverine high-grade ore sortable fractions (10-25mm and 25-75mm) is provided in Figure 4, showing the TREO grade and value recovery percentage as a function of mass.

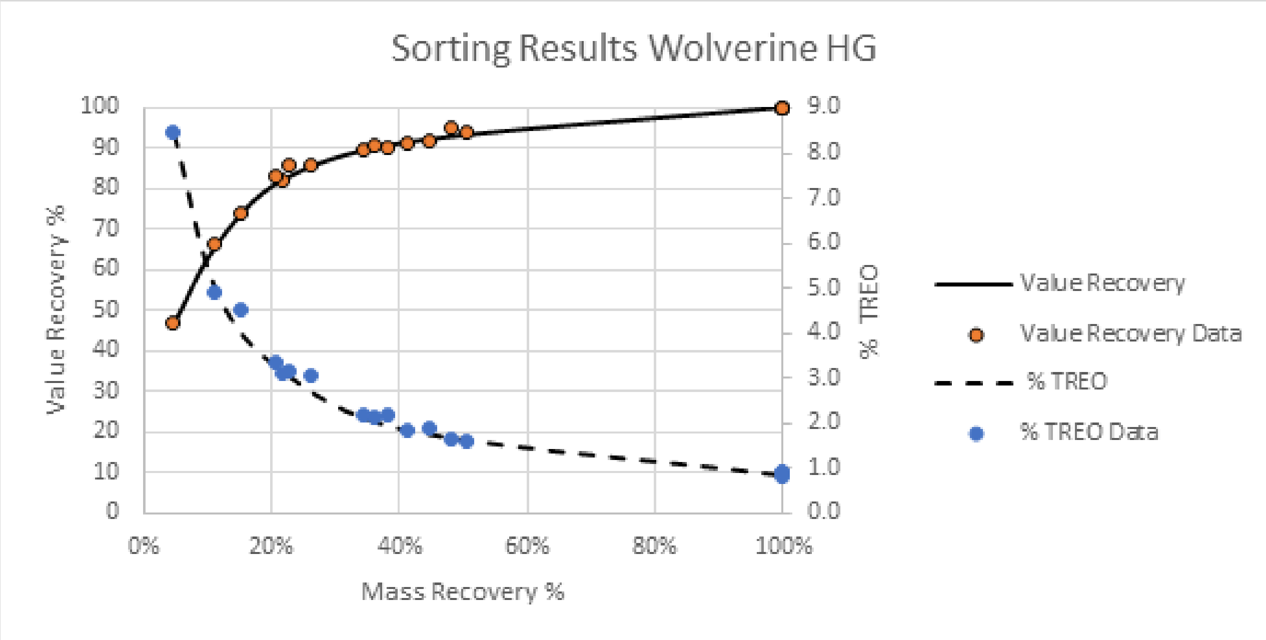

Figure 4: Graph demonstrating the value recovery improvements versus mass recovery from ore sorting tests on the Wolverine High Grade stockpile.

Approximately 80% of the value of the sortable fractions can be recovered in 20% of the mass, representing a four-times upgrade factor; or, alternatively, 90% of value can be recovered in 40% of the mass, representing a 2.25 times upgrade factor.

When the upgraded sorted ore is added to the fine ore that cannot be sorted, which for Wolverine high-grade represents approximately 25% of the feed mass and has a higher grade than the other sized fractions, 90% of the value in the ore feed can be recovered in 42% of the mass giving an upgrade factor of 2.1. Most significantly by recovering 50% of the mass of the sortable fractions from a feed with a grade of 1.16% TREO and combining this with the unsorted fines fraction, a 2%TREO grade can be achieved for the ore feed to the mill.

Given this encouraging result for the Wolverine High Grade stockpile and the positive results from the preliminary sorting test results for the other stockpiles, the Company proposes to utilise ore sorting to target an increase in the head grade to the mill of 2% TREO. An increased mill head grade will provide an increase in TREO production at the current pilot plant design mill feed rate.

Comprehensive testwork to confirm the preliminary sorting tests and quantify the recovery and grades that can be achieved with the other stockpiles is ongoing. Bulk samples of approximately 100t have been collected and crushed using the in-situ mine site crusher for each stockpile and a 2.5t sample of the Gambit Medium Grade stockpile has been sorted on a Steinert sorter using XRT technology with results are expected shortly. Similar tests are to be done on the Wolverine Medium Grade, Gambit West High Grade and Low Grade stockpiles which will allow the Company to refine the strategy prior to execution.

The stockpiled material that is the subject of this report is currently stockpiled on the ROM pad ahead of the crushing circuit at the Browns Range Pilot Plant.

The locations and configuration of the five stockpiles are shown in Figure 5 below as:

A) Gambit West High Grade
B) Gambit West Medium Grade
C) Wolverine High Grade
D) Wolverine Medium Grade
E) Low Grade

Figure 5: Location the five ore stockpiles to be subject to ore sorting.

Nexus Bonum Pty Ltd (Nexus) was engaged to undertake a feasibility study for the, design, supply and installation of an ore sorting circuit ahead of the pilot plant at Browns Range.

A number of process and plant configuration concepts were assessed to determine the most efficient and cost-effective process design. The option selected is dual particle size range sorting with the ranges of 10-25mm and 25-75mm. The sub 10mm material is considered fines, which will be blended with the upgraded sorter product. Material greater than 75mm will be returned to the crushing circuit for reprocessing through the ore sorting circuit.

The ore sorting circuit will be integrated into the existing pilot plant, directly between the crushed ore stockpile and the mill feed hopper. The existing process plant has been built with a crushing capacity 216,000 tpa which is well in excess of the nameplate capacity of downstream beneficiation plant of 72,000tpa and will be suitable for the ore sorting circuit.

The ore sorter circuit will divert the feed from the primary crusher ore stockpile conveyor over a screen and through the ore sorting circuit that establishes mill feed stockpiles of upgraded sorted ore, a separate fines stockpile, and optionally a blend stockpile of fines and upgraded sorted ore. Rejected, low grade ore is conveyed to the stockpile for processing at a later stage. The proposed location of the ore sorting circuit is shown in Figure 1 and the capital cost for the supply and installation of this circuit is estimated at A$4 million.

Investors are encouraged to update their contact details to stay up to date with Northern Minerals news and research at: http://northernminerals.com.au/update-details/

Investors can find more information and a replay of the October 4 Investor Briefing at: http://northernminerals.com.au/investor-centre

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About Northern Minerals:

Northern Minerals Limited (ASX: NTU; Northern Minerals or the Company) has completed mechanical commissioning of the Browns Range Heavy Rare Earth Pilot Plant Project in northern Western Australia and commenced production of heavy rare earth carbonate.

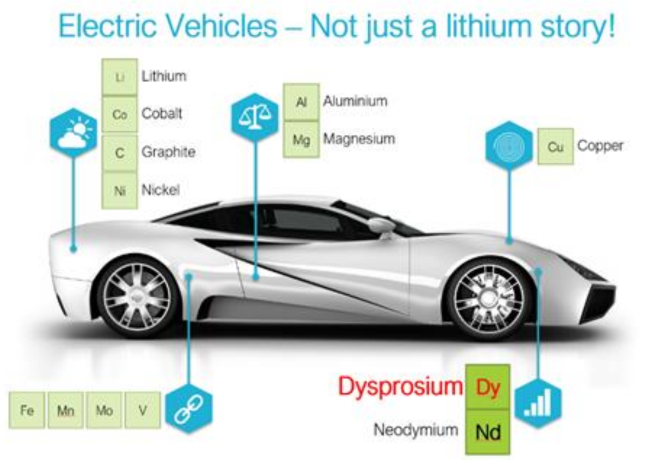
Through the development of its flagship project, the Browns Range Project (the Project), Northern Minerals aims to build the Western Australian operation into the first significant world producer of dysprosium outside of China.

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 and high technology solutions.

The three-year R&D Pilot Plant Project provides the opportunity to gain production experience, surety of supply for the Company's offtake partner and assess the economic and technical feasibility of the larger full-scale development.

For more information: northernminerals.com.au.



ASX Code:	NTU	Market Capitalisation:	A$91m
Issued Shares:	1,161m	Cash (as at 30 June 2018):	A$10.4m

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 Australian 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.

NORTHERN MINERALS

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. • Preliminary Test work on samples from all five stock piles was done on hand selected, bucket sized samples (3-20kg) collected from surface of stockpiles in the size range required for ore sorting. These samples are not expected to be representative of stockpile composition. • Bulk sample of 100t was collected from five accessible points on Wolverine High Grade stockpile. This was mixed on a heap, crushed on the plant crusher and belt cuts from the crusher discharge conveyor periodically collected (approximately 20 belt cuts) to get a 2.5 ton sub sample. The sub sample was wet screened at a metallurgical laboratory into four size fractions; fines, 10-25mm, 25-75mm and oversized (>75mm). The 10-25mm and 25-75mm fractions were split into two and sent for ore sorting at two separate vendors ore sorting test facilities. The sorted material, fines and oversize samples were crushed to <6mm, split using a rotary splitter at a metallurgical laboratory before analysis using via XRF/ICP. Head grade was back calculated from the combined mass and analyses of each fraction.
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*	• Not applicable to this announcement.

Criteria	JORC Code explanation	Commentary
	loss/gain of fine/coarse material.	
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• Not applicable to this announcement.
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 a certified laboratory in Perth. • Samples were analysed via XRF/ICP 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*	• Samples were taken from ROM stockpiles of ore sourced from the Gambit West and Wolverine open pits. • Samples from the preliminary tests targeted material from all five stockpiles to test ore from both the Gambit West and Wolverine

Criteria	JORC Code explanation	Commentary
	verification, data storage (physical and electronic) protocols. • *Discuss any adjustment to assay data.*	deposits. Sampling specifically targeted a range of high grade, medium grade and low grade material. • The bulk sample tested the Wolverine High Grade stockpile only. • No adjustment was made to any analytical data
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.*	• Ore samples were taken from the ROM pad at the Browns Range pilot plant. • Samples were of blasted ore from an open pit mining campaign completed at the Gambit West and Wolverine deposits. • Preliminary tests were performed on small samples of hand selected of rocks in the size range required for sorting from the surface of the stockpiles. Material was taken from each of the Wolverine and Gambit High grade and medium grade stockpiles, as well as the mixed low grade stockpile. These are not considered representative of the stockpile composition but of the type of mineralisation contained in the stockpile • The bulk test sample was taken from five accessible positions on the face of the Wolverine High Grade stockpile.
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, bagged, and marked before shipping to the laboratory by truck. Sample identifications were checked, the screened material drummed and labelled before transport to the ore sorting test facilities. Sorted samples were again bagged and marked and checked before the analytical sample preparation and

Criteria	JORC Code explanation	Commentary
		analysis.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• Each ore sorting test was witnessed by Northern Minerals technical staff

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	• *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 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 Browns Range pilot plant operation, including the Gambit West and Wolverine Open pits, is located wholly within Mining Licence 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

Criteria	JORC Code explanation	Commentary
		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. • 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 (YPO_4). The Florencite

Criteria	JORC Code explanation	Commentary
		((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.
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*	• Not applicable to this announcement.

Criteria	JORC Code explanation	Commentary
	reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	
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.