



## PROCESSING TRIAL DELIVERS PREMIUM IRON PRODUCT

Magnum Mining & Exploration Limited (ASX: MGU, Magnum, or the Company) has successfully completed a bulk processing trial on its Buena Vista Iron Project magnetite ore.

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### HIGHLIGHTS

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- Bulk Direct Reduction Iron grade concentrate produced with simple flowsheet
  - Premium product of 69% Fe grade to attract premium pricing
  - Low deleterious elements confirms superior magnetite concentrate
  - The test yielded an exceptional 45% recovery
  - Premium for DRI grades is trending to 75% over benchmark iron fines
  - DRI concentrate is critical to feeding the emerging green steel production
  - Concentrate is to be made available to potential end users for internal testing
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As announced on 7 June, 2024<sup>1</sup>, Australian Perth-based laboratory, ALS, completed metallurgical test work on a bulk sample from Magnum's Buena Vista Iron Project in Nevada, USA. Processing of the entire bulk sample, using the outcomes of this initial work, has produce a magnetite concentrate of **69% Fe** with a **45% recovery**.

### BULK SAMPLE PROCESSING CONFIRMS PREMIUM GRADE PRODUCT

Initial Davis Tube Recovery (DTR) tests, using progressive grind sizes, characterised the grade-recovery curve for the Buena Vista magnetite sample at a range of grind sizes. A final grind size of 38µm (micrometres) was chosen to optimise magnetite recoveries while minimising the deleterious contaminants (eg, Figure 1).

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<sup>1</sup> ASX:MGU "Metallurgical Tests Confirm High Grade Product", 7 June, 2024

With that test work completed, ALS were contracted to apply this optimal proposed processing flow sheet to the remainder of the bulk sample as a bulk processing exercise. The aims were to:

- (a) confirm that the flowsheet was applicable to a bulk process,
- (b) provide final product specifications based on that flowsheet in “steady state” processing mode, and
- (c) produce sufficient magnetite concentrate to provide to potential off-take partners for their own internal test work.

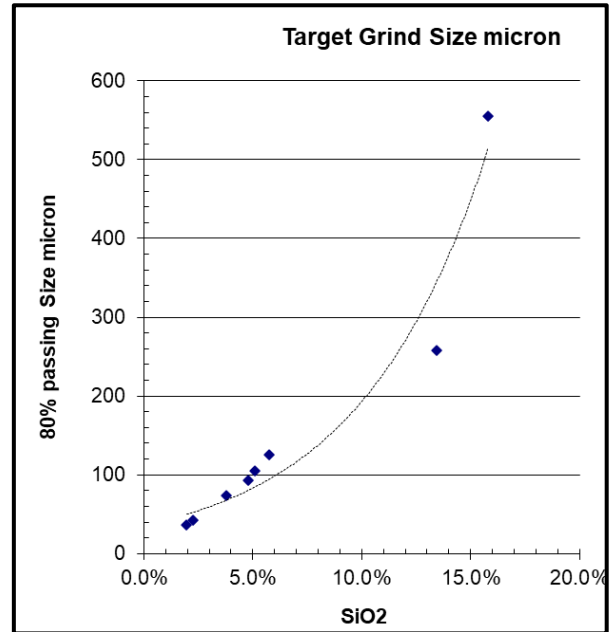


Figure 1 Progressive grind size studies shows the reduction in silica content of the Buena Vista bulk magnetite sample.

### PROCESS FLOW SHEET IS SIMPLE AND INDUSTRY STANDARD

The bulk sample of 432kg was bulk processed using an industry standard flowsheet (Figure 3). This consisted of crushing the ore to -1mm and passing it through a “rougher” low intensity magnetic separator (LIMS) resulting in 243.4kg of coarse product. A subsample of this was put aside for later additional test work with the remaining 211kg then ground to notionally 80% passing 38µm and washed through a “finer” LIMS to produce 164.6kg of final product. Both LIMs were run wet.

The final product specification (Table 1) shows that a premium Direct Reduction Iron (DRI) feed is readily produced with this simple flowsheet. Crucially, the combined SiO<sub>2</sub> plus Al<sub>2</sub>O<sub>3</sub> content is below 3%, the critical maximum for DRI.

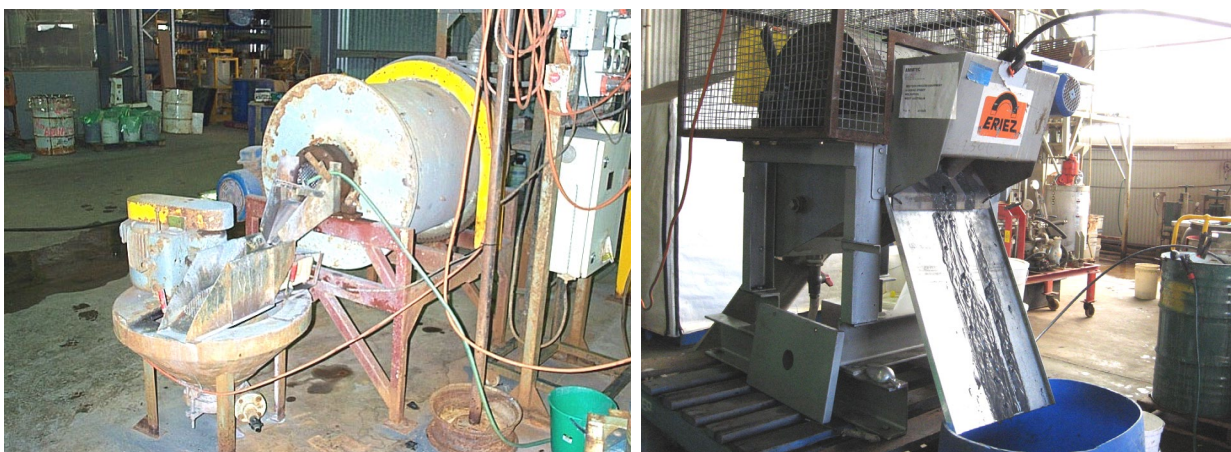
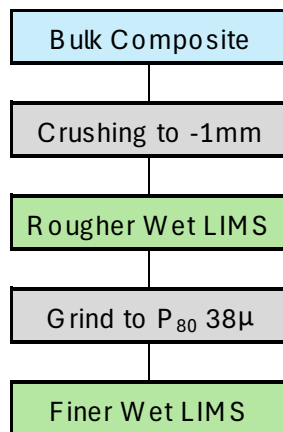


Figure 2 Ball mill (left) and magnetic drum separator (LIMS) (right) used to grind the sample to 38µm and then separate the magnetite particles from the resultant material. The operational procedure used mimics steady state production at an industrial scale.



**Figure 3** Summary flowsheet used in the bulk processing trial is a simple, standard process. LIMS is Low Intensity Magnetic Separation

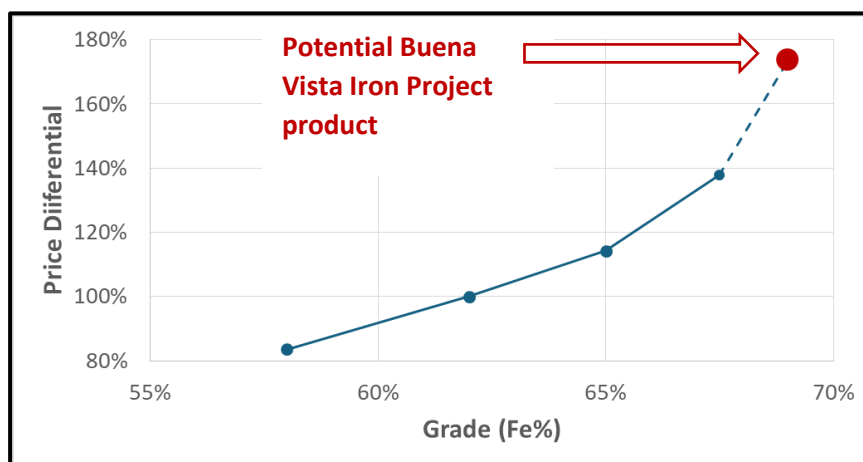
**Table 1** Final Buena Vista magnetite concentrate chemistry

Fe%	FeO%	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	P%	S%	Mn%	Ca%	Mg%	Ti%	K%	V%	LOI
69.0	25.8	1.62	0.51	0.005	0.001	0.04	0.13	0.12	0.14	0.01	0.260	-2.51

The final recovery is 45%, an exceptional outcome and well above the industry norm.

### A PREMIUM PRODUCT ATTRACTING A PREMIUM PRICE

The current premium enjoyed by a high grade magnetite concentrate is approaching 75% when compared to the standard fines iron price<sup>2</sup> (Figure 4). While ultimately the prices received will depend on off-take agreements, the contemporary spot market, and future economic conditions, this differential has been relatively consistent over a long time.



**Figure 4** Iron ore pricing premium curve. The value for 69% Fe is extrapolated from lower grade product pricing guided by Value In Use models provided by potential end users. The basis (100%) is the benchmark 62% Fe fines price. The data was derived from iron ore pricing as of 23 July, 2024 (<https://price.metal.com/Iron-Ore-Index>).

The concentrate iron grade can be further increased, and deleterious element content decreased, by passing the material through a floatation circuit. The comparative economics of this is being considered before a decision is made on this additional processing stage. With the DRI grades achieved it is not required, but may increase the premium paid for the product.

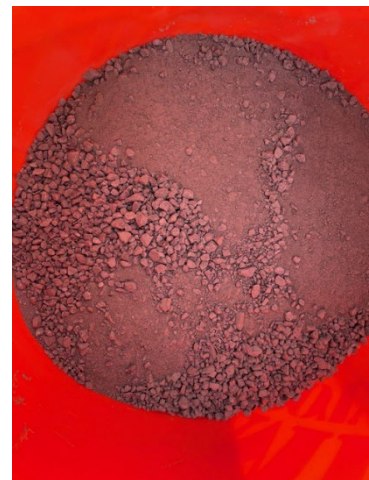
<sup>2</sup> <https://price.metal.com/Iron-Ore-Index>

*“The Buena Vista Iron Project continues to prove that it can deliver an exceptionally high grade DRI product. This bulk test work confirms that this premium product can be readily produced using standard flow sheet designs at a production scale.”*

*Neil Goodman, MD of Magnum*

## **NEXT STEPS**

Economic evaluation of including a floatation circuit by modelling capital and operating costs verses a premium increase due to delivering a higher grade product, is being undertaken. Samples of the final product are being made available to potential end users of the Buena Vista magnetite concentrate for their own internal test work.



*Figure 5 Photos of the process of sample collection through to shipping through to the final concentrate product.*



## CAUTIONARY STATEMENTS

This release contains “forward-looking information” that is based on the Company’s expectations, estimates and projections as of the date on which the statements were made. This forward-looking information includes, among other things, statements with respect to studies, the Company’s entry into a definitive agreement with Midmetal, the Company’s business strategy, plan, development, objectives, performance, outlook, growth, cash flow, projections, targets and expectations. Generally, this forward-looking information can be identified by the use of forward-looking terminology such as ‘outlook’, ‘anticipate’, ‘project’, ‘target’, ‘likely’, ‘believe’, ‘estimate’, ‘expect’, ‘intend’, ‘may’, ‘would’, ‘could’, ‘should’, ‘scheduled’, ‘will’, ‘plan’, ‘forecast’, ‘evolve’ and similar expressions. Persons reading this news release are cautioned that such statements are only predictions, and that the Company’s actual future results or performance may be materially different. Forward-looking information is subject to known and unknown risks, uncertainties and other factors that may cause the Company’s actual results, level of activity, performance or achievements to be materially different from those expressed or implied by such forward-looking information.

Forward-looking information is developed based on assumptions about such risks, uncertainties and other factors set out herein, including but not limited to general business, economic, competitive, political and social uncertainties; the actual results of current development activities; conclusions of economic evaluations; changes in project parameters as plans continue to be refined; future prices of metals; failure of plant, equipment or processes to operate as anticipated; accident, labour disputes and other risks of the mining industry; and delays in obtaining governmental approvals or financing or in the completion of development or construction activities. This list is not exhaustive of the factors that may affect our forward-looking information. These and other factors should be considered carefully, and readers should not place undue reliance on such forward-looking information.

Neither the Company, nor any other person, gives any representation, warranty, assurance or guarantee that the occurrence of the events expressed or implied in any forward-looking statement will actually occur. Except as required by law, and only to the extent so required, none of the Company, its subsidiaries or its or their directors, officers, employees, advisors or agents or any other person shall in any way be liable to any person or body for any loss, claim, demand, damages, costs or expenses of whatever nature arising in any way out of, or in connection with, the information contained in this document. The Company disclaims any intent or obligations to or revise any forward-looking statements whether as a result of new information, estimates, or options, future events or results or otherwise, unless required to do so by law.

## COMPETENT PERSON’S STATEMENT

The information in this announcement that relates to metallurgical test work is based on information compiled by Mr Marcus Flis, a Competent Person who is a Fellow of the Australasian Institute of Mining and Metallurgy and a full time employee of Rountree Pty Ltd. Mr Flis has sufficient experience which is 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 Exploration Results, Mineral Resources and Ore Reserves.” Mr Flis consents to the inclusion of the matters outlined in this announcement the form and context in which they appear.

## BY ORDER OF THE BOARD

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**JORC Code, 2012 Edition – Table 1 report****SECTION 1 – SAMPLING TECHNIQUES AND DATA**

<b>CRITERIA</b>	<b>COMMENTARY</b>
Sampling techniques	<ul style="list-style-type: none"> <li>Broken ore was collected from existing stockpiles.</li> <li>The samples were taken from 20 – 30cm below the surface to avoid modern contamination of winnowing by wind.</li> <li>Collection of samples were guided with the use of both a magnetic susceptibility meter and a pXRF geochemical analyser to ensure grades averaged those defined in the Initial Mining Area pit model.</li> <li>Graded material was collected in sixteen 20 litre buckets for compositing to that average resource-modelled grade. The buckets were labelled as Low Grade, Medium Grade, and High Grade to assist in the compositing process.</li> <li>Average iron grades of each bucket were estimated from both magnetic susceptibility measurements and pXRF analysis, both techniques having being demonstrated previously to be excellent estimators of iron grade.</li> <li>Approximately 736kg of material were collected.</li> </ul>
Drilling techniques	<ul style="list-style-type: none"> <li>Drilling is not being reported</li> </ul>
Drill sample recovery	<ul style="list-style-type: none"> <li>Drilling is not being reported</li> </ul>
Logging	<ul style="list-style-type: none"> <li>A description of each sample was logged by the sampling geologist and entered into Magnum's database.</li> </ul>
Sub- sampling techniques and sample preparation	<p>There was no in-field subsampling.</p> <p>The samples were delivered to American Assay Laboratories in Sparks, Nevada for initial crushing, by the independent consulting geologist.</p> <p>Samples did not need drying.</p> <p>Dry samples are jaw crushed to 90% passing -6.35mm.</p> <p>Samples were sealed, palletted, and dispatched by commercial courier to ALS laboratories in Perth, Western Australia for metallurgical testing.</p>
Quality of assay data and laboratory tests	<ul style="list-style-type: none"> <li>ALS produced a composite sample collated from the samples provided.</li> <li>The samples for the grind verses grade curve excluded the samples with a magnetic susceptibility estimated Fe content below 10% and above 60%.</li> <li>For the production of the bulk concentrate the samples above 60% Fe were added back in.</li> <li>Eight samples were drawn from the bulk composite sample and ground to different sizes and washed in a Davis Tube.</li> <li>The sizes were 555, 258, 125, 105, 93, 74, 43, and 36µm.</li> <li>The Davis Tube procedure used industry standard parameters.</li> </ul>
Verification of sampling and assaying	<ul style="list-style-type: none"> <li>A note book was used to record primary data in the field. Primary data was then entered digitally and is stored and archived to Magnum's server in Excel format. Data is visually checked and validated prior to import and additional validation is carried out upon entry to the database.</li> <li>All data is checked by a Competent Person.</li> <li>No adjustments or calibrations were made to the assay data.</li> </ul>

Location of data points	<ul style="list-style-type: none"> <li>Handheld GPS was used to determine sample locations with an accuracy of approximately <math>\pm 5\text{m}</math>.</li> <li>Grid Co-ordinate system used is NAD83, UTM Zone 11N.</li> <li>Original Handheld GPS co-ords are maintained in the database.</li> <li>This is considered appropriate at this early stage of exploration.</li> </ul>
Data spacing and distribution	<ul style="list-style-type: none"> <li>Data spacing was not systematic but designed to obtain representative grades.</li> <li>Data spacing is sufficient for this early stage of assessment</li> </ul>
Orientation of data in relation to geological structure	<ul style="list-style-type: none"> <li>Not applicable – samples were collected from stockpiles having no preferred orientation</li> </ul>
Sample security	<ul style="list-style-type: none"> <li>Samples are collected by an independent consulting senior geologist</li> <li>Samples are secured in locked premises and not left unlocked or unattended in public places</li> <li>All samples were transported to the lab by an independent consultant geologist</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li>The laboratory's QA/QC procedures and results are monitored.</li> <li>All samples were measured with a magnetic susceptibility meter and pXRF by Company staff and checked against ALS' assaying.</li> <li>No reviews have been undertaken at this stage.</li> </ul>

## SECTION 2 – REPORTING OF EXPLORATION RESULTS

Criteria listed in the preceding section also apply to this section

CRITERIA	COMMENTARY
Mineral tenement and land tenure status	<ul style="list-style-type: none"> <li>The project contains mineral rights over 234 separate claims covering an area of 2,457Ha (6,071 acres). Of these 45 are patented mining claims with the balance being either former railroad fee title land or unpatented claims</li> <li>The 45 patented mining claims covering 777 acres are all secured through lease agreements and have overriding royalties.</li> <li>The project has surface rights to the Section 5 patented land claim (528 acres). These rights provide for the housing of Buena Vista's proposed production facilities, plant, workshops stockpiles and waste dumps.</li> <li>All tenements are in good standing.</li> <li>Relevant tenements to this announcement are T24NR34E Section 4, Section 5, Section 7, Section 8, Section 17, Rover 1832, Albatross 1832, Wyoming 1832, Cactus 1832, NVFe2,3,4,5,6,7,8, Iron Mt 2MS14880, 3MS14880, 6MS14880, 7MS14880, 10MS14880, 12MS14880, 13MS14880, 14MS14880, 15MS14880</li> </ul>
Exploration done by other parties	<ul style="list-style-type: none"> <li>The database compiled for resource modelling comprises 218 holes for 36,084 m of drilling. Diamond drilling by Columbia Iron Mines in 1960 provides around 50% of the combined drilling (112 holes for 18,215 m), with 2010 Richmond Mining Pty Ltd diamond drilling contributing 4% (8 holes, 1,415 m), and 2012 Nevada Iron Limited RC and diamond drilling contributing 10% and 36% respectively (19 holes, 3,431 m and 50 holes, 13,024m).</li> </ul>

Geology	<ul style="list-style-type: none"> <li>Buena Vista magnetite iron mineralisation occurs within scapolite-hornblende-clinopyroxene-calcite-magnetite altered gabbro. Magnetite mineralisation varies from fine disseminations to massive pods up to tens of metres in dimensions, reflecting variable ground preparation of the gabbro. The mineralisation generally dips moderately to the north, striking approximately east-southeast (~098 to 120) for most of the property area, and trending southwest-northeast in the East Deposit area (~070).</li> <li>The magnetite mineralisation is cross cut by late-stage steep, generally east west trending dykes ranging in thickness from less than 1m to rarely ~60 m.</li> <li>The mineralisation generally outcrops, but in the west of the project, including the Section 5 Deposit and western portions of the West Deposit it is overlain by around 3 to rarely 25m of un-mineralised surficial alluvial gravels.</li> <li>The mineralisation shows no significant oxidation, with fresh material occurring at shallow depths</li> </ul>
Drill hole information	<ul style="list-style-type: none"> <li>No drill hole results are reported in this announcement.</li> </ul>
Data aggregation methods	<ul style="list-style-type: none"> <li>No aggregation has been applied.</li> </ul>
Relation between mineralisation widths and intercept lengths	<ul style="list-style-type: none"> <li>No drill hole results are reported in this announcement.</li> </ul>
Diagrams	<ul style="list-style-type: none"> <li>See diagrams included in this announcement.</li> </ul>
Balanced reporting	<ul style="list-style-type: none"> <li>All results are reported in this release.</li> </ul>
Other substantive exploration data	<ul style="list-style-type: none"> <li>Drilling, geological mapping, geophysical surveying, and metallurgical testing exist and have been reported in previous announcements</li> </ul>
Further work	<ul style="list-style-type: none"> <li>Flotation testing may be done, depending on economic indicators.</li> <li>The bulk concentrate sample will be offered for testing to potential off-take customers.</li> </ul>