MAGNUM
MINING AND EXPLORATION LIMITED

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Magnum Mining and Exploration Limited
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ASX Code
MGU

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QUARTERLY ACTIVITIES REPORT

For the Period Ending 30 September, 2024

Magnum Mining & Exploration Limited (ASX: **MGU**) (**Magnum** or the **Company**) is pleased to provide a summary of its activities on the Buena Vista Magnetite Project in Nevada, USA.

HIGHLIGHTS

- Magnum successfully completed a bulk processing trial on its Buena Vista Iron Project magnetite ore.
- Magnum completed a multispectral analysis of its Buena Vista Project in Nevada, USA. The exercise was undertaken to assess the ground for a wide range of possible mineralisation styles.
- Magnum announced that it has entered into an agreement with 2x1 Digital Private Limited to incorporate a joint venture company to establish facilities for the trading, production and supply of biochar, iron ore and green pig iron in Malaysia.

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BUENA VISTA PROJECT

BULK SAMPLE PROCESSING CONFIRMS PREMIUM GRADE PRODUCT

As announced on 7 June, 2024[1], 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**.

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 (e.g., Figure 1).

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.

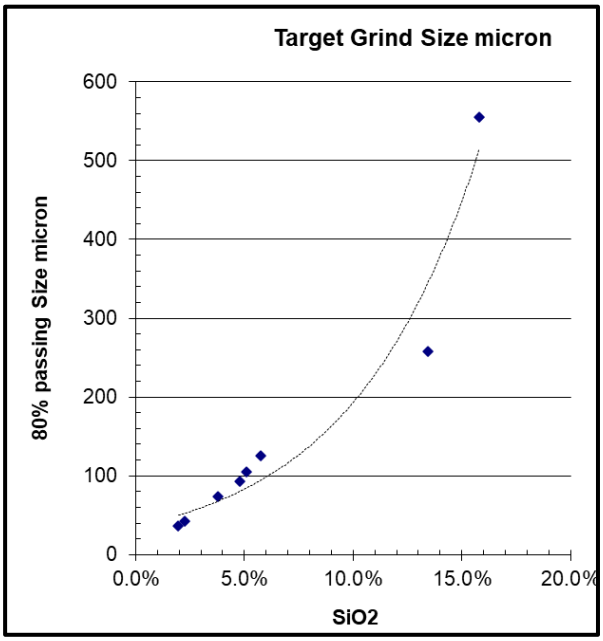

Figure 1 Progressive grind size studies shows the reduction in silica content of the Buena Vista bulk magnetite sample.

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.

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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_2 plus Al_2O_3 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.

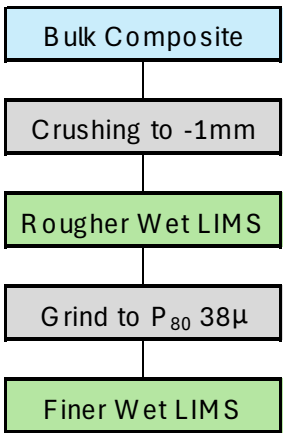

Figure 3 Summary flowsheet used in the bulk processing trial is a simple, standard process. LIMS is Low Intensity Magnetic Separation

Table 1 Final Buena Vista magnetite concentrate chemistry

Fe%	FeO%	SiO_2	Al_2O_3	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.

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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[2] (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.

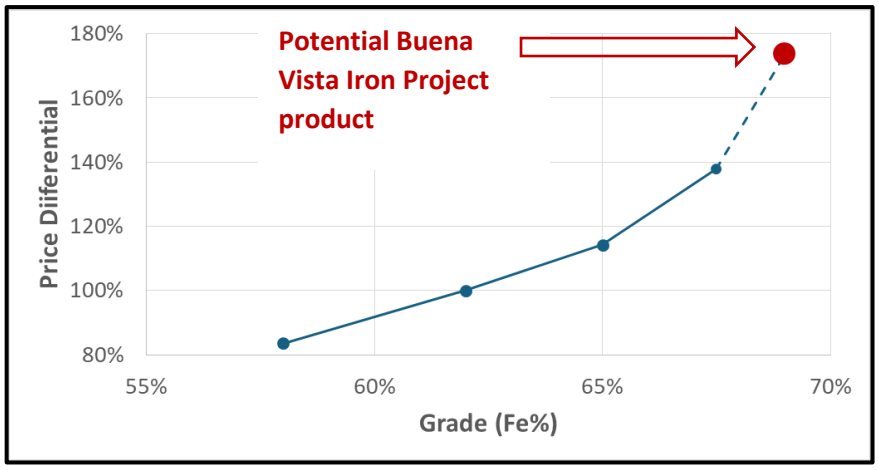

Figure 4 Iron ore pricing premium curve. The value for 69% Fe is extrapolated from lower grade product pricing guided by Value In Use models provided by potential end users. The basis (100%) is the benchmark 62% Fe fines price. The data was derived from iron ore pricing as of 23 July, 2024 (https://price.metal.com/Iron-Ore-Index).

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.

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.

[2] https://price.metal.com/Iron-Ore-Index

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NEODYMIUM TARGETS IDENTIFIED

Supervised classification of Sentinal-2 satellite multispectral data, backed up with spectral ratios and gas signatures, has delivered encouraging results at the Buena Vista Project.

The classification has outlined several target zones in areas that have not previously been explored. The targets are associated with anomalous Nd responses defined by both their primary Nd-oxide spectral signatures and the presence of gases commonly associated with mineral deposits, particularly REE and sulphide minerals.

Areas of anomalous pyrite and arsenopyrite also identified are being assessed for significance.

Three anomalous areas have been identified (Figure 2)[3,4,5]:

Figure 6: The Buena Vista Magnetite Project is located in Nevada, USA, about an hour's drive from Reno.

SENTINAL-2 SATELLITE MULTISPECTRAL DATA

Sentinal-2 is a multispectral satellite scanner operated by European Space Agency's Copernicus Programme.

It scans and records 13 wavelengths of the electromagnetic spectrum in the visible, near infrared, and short-wave infrared reflected from the earth's surface. This data is used to identify a number of diagnostic spectra from specific minerals that may aid in the interpretation of alteration mineral assemblages potentially associated with mineral deposits.

Mr Noel Pendock of DiRT Exploration, a globally recognised expert in remote image processing and interpretation, undertook the study.

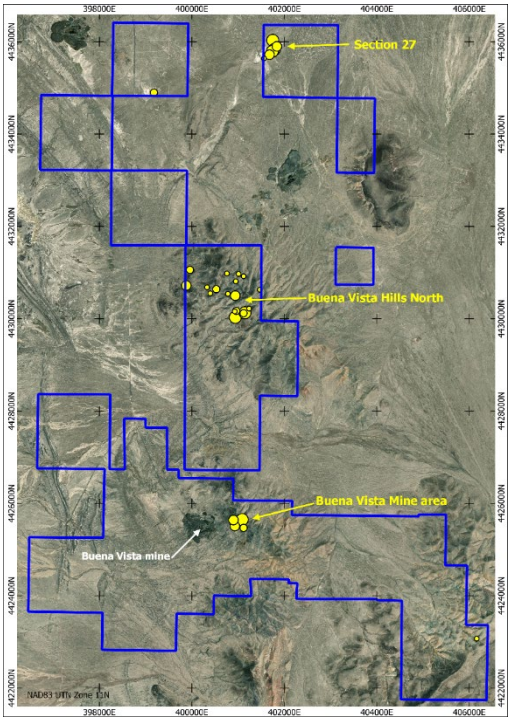

Figure 7: Buena Vista Magnetite Project leases showing Sentinel-2 targets. Symbol size relates to target strength.

[3] Buena Vista Mine area: a cluster of responses to the north of the Buena Vista magnetite deposit.
[4] Section 27: responses associated with a playa to the north-west of the Sect 27 magnetite prospect.
[5] Buena Vista Hills North: a large grouping of anomalous responses in an area having little geological data.

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NEODYMIUM: CRITICAL MINERAL FOR A DECARBONISED FUTURE

Nd is a member of the REE , of which it is typically the most abundant. Nd alloys are used to make powerful permanent magnets. These are used in electric motors with a high power-to-weight ratio (e.g., in hybrid cars) and generators (e.g., aircraft and wind turbine electric generators) and are considered critical to those applications.

Nd rarely occurs by itself and is usually associated with REE-bearing ores such as monazite and carbonate hosted bastnasite. In this case, the occurrence of Nd is seen as an indicator element for possible REE mineralisation.

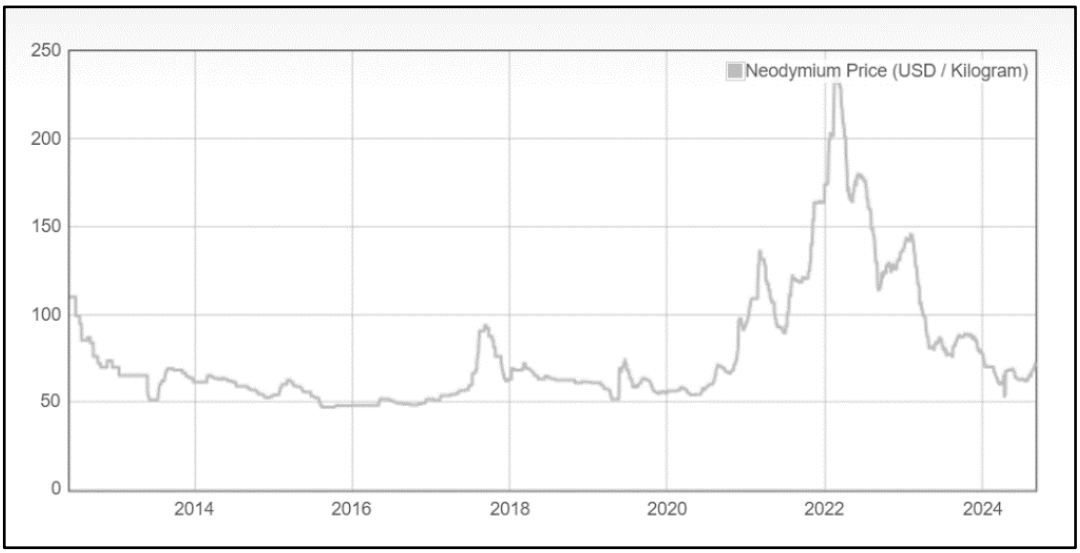

Figure 8 Nd price history (source: https://www.dailymetalprice.com)

Nd is seen as a critical mineral as the world transitions to a low carbon future, especially in relation to the production of electric motors and generators. Nd's price however has been volatile, ranging from US$50,000 to US$140,000/tonne over the past 10 years.

NEXT STEPS

The three target zones outlined by the study will be pursued in the field with reconnaissance geochemical surface sampling and lithology identification in the first instance. Positive results may result in methodical sampling and drilling if warranted.

Until verified in the field, these targets should be considered as notional.

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GREEN PIG IRON PROJECTS

Magnum Mining & Exploration Limited (ASX: **MGU**, **Magnum**, or the **Company**) entered into a binding agreement with 2x1.Digital Private Limited (**2x1**) to incorporate a joint venture company (**JV Co**) to establish facilities for the trading, production and supply of biochar, iron ore and green pig iron in Malaysia.

PARTNERSHIP TO SEE THE ESTABLISHMENT OF A VERTICALLY INTEGRATED BUSINESS

The JV Co is being established for the purposes of carrying out, amongst other things, the:

- installation of facilities for the trading, production and supply of biochar, iron ore and green pig iron in Malaysia. The green pig iron will be produced via the use of the HIsmelt technology that will smelt steel industry waste and iron ore with renewable biochar;
- trading and supply of iron ore, biochar and green pig iron;
- management of procurement contracts and sales and marketing; and
- technical advisory services.

Under the terms of the agreement, the JV Co is to be owned 50% by Magnum and 50% by 2x1. The agreement has an initial term of two years but can be terminated with 90 days' notice by either party. The term may be renewed with the agreement of both parties.

The establishment of the JV Co and proposed integrated business in Malaysia is complementary to the Company's existing activities, including the proposed establishment of the Green Pig Iron Project in Saudi Arabia.

SAUDI GREEN PIG IRON PROJECT

Magnum entered into a Project Funding Agreement to undertake a capital raising to advance its Green Pig Iron Project in Saudi Arabia[6]. That agreement envisages the construction of a HIsmelt plant that will be fed by steel mill waste augmented by magnetite from the Company's proposed Buena Vista Magnetite mine. Negotiations with a Saudi steelmaking company are progressing well. Magnum is confident that these negotiations are on target and are drawing to an agreeable conclusion.

[6] ASX:MGU "Funding Round for Green Pig Iron Project in Saudi Arabia", 13 May, 2024

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MAGNUM MINING SINGAPORE PTE LTD

Magnum has set up a wholly owned subsidiary in Singapore to hold future assets in Saudi Arabia and Malaysia. Magnum Mining Singapore Pte Ltd was incorporated under section 19(4) of the Singapore Companies Act on June 24, 2024.

NEXT STEPS

The anticipated activities over the next quarter are detailed below:

1. Establishment of the JV Co in Malaysia.
2. Signing of biochar agreements with Malaysian partners.
3. Signing of green pig iron agreements with Saudi and Malaysian partners.
4. Advance the assessment of the Company's mineral claims for a range of targeted commodities.

APPENDIX 5B

In accordance with ASX Listing Rule 5.3.2, the Company advises that no mining development or production activities were conducted during the September 2024 Quarter.

As set out in the attached Appendix 5B, exploration expenditure during the quarter totaled A$178,860. Payments to related parties totaling A$193,810 consisted of remuneration paid to executive and non-executive directors and an associate of a director under respective service agreements.

This document has been authorised for release to the ASX by the Company's Board of Directors.

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