



SPECTRAL ANALYSIS IDENTIFIES NEODYMIUM TARGETS

Magnum Mining & Exploration Limited (ASX: MGU, Magnum, or the Company) has completed a multispectral analysis of its Buena Vista Project in Nevada, USA (Figure 1). The exercise was undertaken to assess the ground for a wide range of possible mineralisation styles.

HIGHLIGHTS

- Hyperspectral mapping with Sentinel-2 satellite data has been completed on Buena Vista
- Neodymium (**Nd**) targets have been identified
- Nd is a Rare Earth Element (**REE**) that usually occurs with other REEs
- The Nd target zones have been identified in as yet unexplored ground
- Highly anomalous pyrite and arsenopyrite signatures to be assessed for sulphide mineralisation
- Field reconnaissance and surface geochemistry testing will be required to verify results

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

NEODYMIUM TARGETS IDENTIFIED

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.



Figure 1: The Buena Vista Magnetite Project is located in Nevada, USA, about an hour's drive from Reno.

Three anomalous areas have been identified (Figure 2)^{1,2,3}:

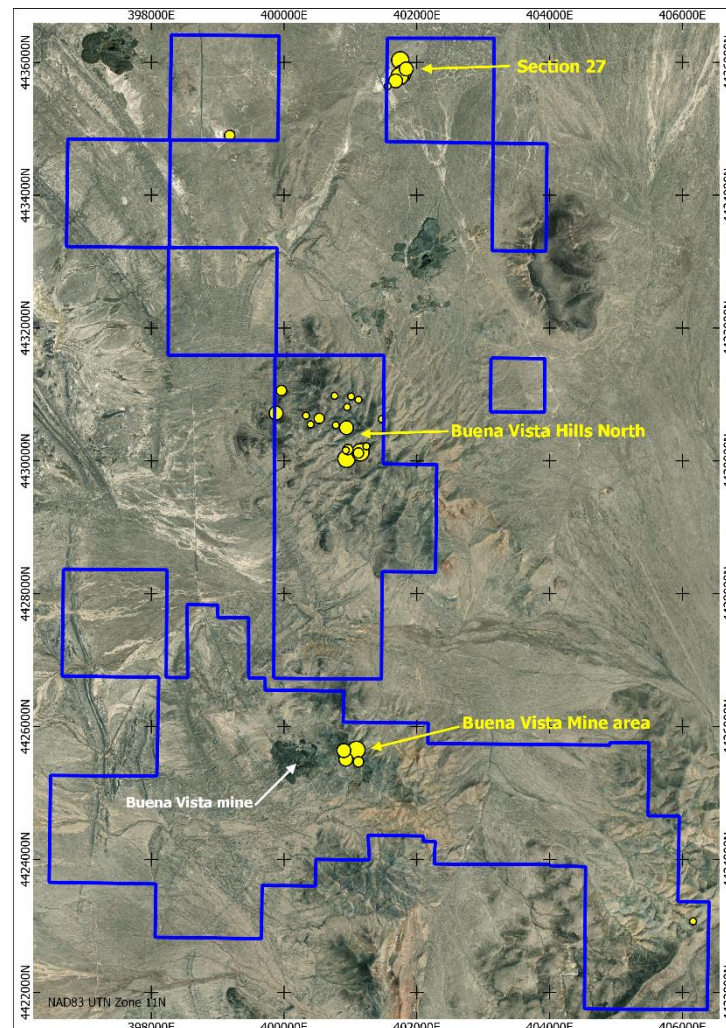


Figure 2: Buena Vista Magnetite Project leases showing Sentinel-2 targets. Symbol size relates to target strength.

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.

¹ Buena Vista Mine area: a cluster of responses to the north of the Buena Vista magnetite deposit.

² Section 27: responses associated with a playa to the north-west of the Sect 27 magnetite prospect.

³ Buena Vista Hills North: a large grouping of anomalous responses in an area having little geological data.

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.

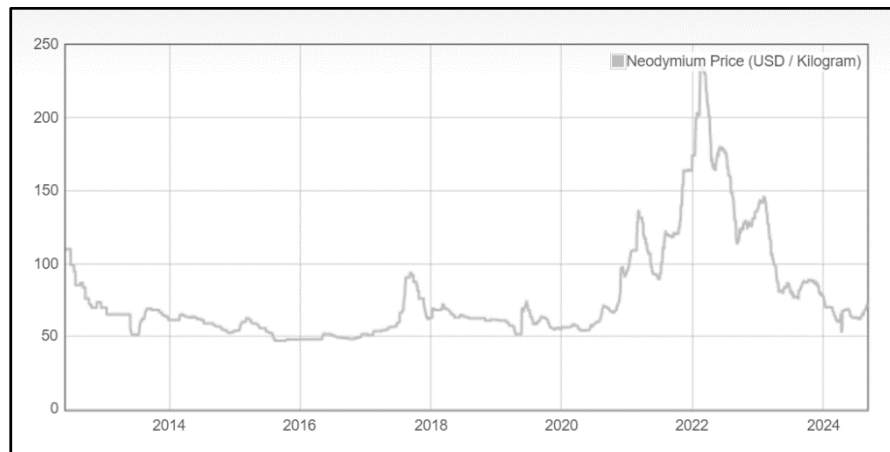


Figure 3 Nd price history (source: <https://www.dailymetalprice.com>)

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.

"The results of this analysis are highly encouraging. The potential to discover other minerals on the Buena Vista mineral claims will be actively pursued to broaden the project's value for Magnum's shareholders. Notably, this work has opened the door to Magnum pursuing minerals listed as critical by the US Federal Government, potentially attracting funding if a substantial discovery is made."

Neil Goodman, MD of Magnum

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.

THE BUENA VISTA IRON DEPOSIT

Buena Vista Iron Deposit is located approximately 160km east-north-east of Reno in the mining friendly state of Nevada, United States. It was discovered in the late 1890's and in the late 1950's to early 1960's around 900,000 tonnes of direct shipping magnetite ore with an estimated grade of 58% Fe was mined.

In the 1960's, US Steel Corporation acquired the Buena Vista Project and carried out an extensive exploration program including 230 diamond drill holes and considerable metallurgical test work. Richmond Mining Limited, an ASX listed company, acquired Buena Vista in 2009 and commenced a detailed exploration program culminating in a definitive feasibility study in 2012. A key component of these studies was extensive investigation of the optimal logistics plan for the deposit's development. This included the negotiation of in-principle agreements with existing rail and port operators and the securing of all major mining permits. Detailed costings were completed on the trucking or slurry pipeline options to deliver the concentrate to the rail head located some 50 kilometres from mine site. A significant decline in iron ore prices to less than US\$50/tonne caused the then proposed development of Buena Vista to be deferred.

Geology

The Buena Vista Project magnetite deposits are the product of late-stage alteration of a localised intrusive local gabbro that resulted in intensely scapolitised lithologies and the deposition of magnetite. The most well-known example of this type of magnetite mineralisation is the Kiruna magnetite deposit in Sweden, which has been in production since the early 1900's.

The distribution and nature of the magnetite mineralisation at Buena Vista is a function of ground preparation by faulting and fracturing, forming a series of open fractures and breccia zones. These ground conditions produce variations in mineralisation types from massive pods grading +60% magnetite to lighter disseminations grading 10-20% magnetite.

Metasomatic magnetite deposits such as those at Buena Vista have important positive beneficiation characteristics over the other main type of magnetite deposit, which is a banded iron hosted magnetite, also known as a taconite.

The Buena Vista ore is of magmatic origin and as a consequence is coarser grained and softer than banded iron hosted ores. Industry standard crushing, grinding and magnetic separation produces a concentrate grade of +67.5% Fe with very low levels of impurities.

Resource

The Mineral Resource Estimate (JORC(2012)) at Buena Vista is⁴:

Category	Million Tonnes	Fe %	DTR %
Indicated Resource	151	19	23.2
Inferred Resource	81	18	22
Total Resource	232	18.6	22.6

The Company confirms that all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed.

Additionally, an Exploration Target has been identified⁵:

The potential quantity and grade of the Exploration Target is conceptual in nature, there has been insufficient exploration to estimate a Mineral Resource and it is uncertain if further exploration will result in the estimation of a Mineral Resource.

Development

Mining permits are in place to develop the Buena Vista Iron Mine. The Company has re-aligned the project from a simple mining, concentration and exporting model to a proposed green pig iron producer. Using cutting edge technology in tandem with biochar sources, the Company aims to capitalise on a first-mover advantage to supply green pig iron to the USA steel industry.

⁴ ASX:MGU – 'Maiden JORC 2012 Resource for Buena Vista Magnetite Project', 23 March 2021.

⁵ ASX:MGU – 'Significant Exploration Target Defined', 13 January 2023.

CAUTIONARY STATEMENTS

COMPETENT PERSON'S STATEMENT – RESOURCE ESTIMATION

The information in this announcement that relates to Mineral Resources is based on information compiled by Mr Jonathon Abbott, a Competent Person who is a Member of the Australian Institute of Geoscientists and a full time employee of MPR Geological Consultants Pty Ltd. Mr Abbott 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 Abbott consents to the inclusion of the matters outlined in this announcement in the form and context in which they appear.

COMPETENT PERSON'S STATEMENT – EXPLORATION TARGET ESTIMATION

The information in this announcement that relates to an Exploration Target 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.

The Company confirms that the form and context in which the Competent Persons' findings are presented have not been materially modified.

NO NEW INFORMATION

The Company confirms that it is not aware of any new information or data that materially affects the information included in this announcement and that all material assumptions and technical parameters underpinning the estimates in the announcement of the 'Maiden JORC Resources for the Buena Vista Magnetite Project' dated 23 March 2021 continue to apply and have not materially changed.

FORWARD LOOKING 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 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.

BY ORDER OF THE BOARD

John O’Gorman

Company Secretary

Email: info@mmel.com.au

Phone: +61 8 6489 0699

Evan Smith

Investor Relations

evan.smith@advisir.com.au

Phone: +61 431 176 607

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

CRITERIA	COMMENTARY
Sampling techniques	• Not applicable
Drilling techniques	• Not applicable
Drill sample recovery	• Not applicable
Logging	• Not applicable
Sub- sampling techniques and sample preparation	• Not applicable
Quality of assay data and laboratory tests	• Not applicable
Verification of sampling and assaying	• Not applicable
Location of data points	• Not applicable.
Data spacing and distribution	• Not applicable.
Orientation of data in relation to geological structure	• Not applicable.
Sample security	• Not applicable.
Audits or reviews	• Not applicable.

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"> 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 The 45 patented mining claims covering 777 acres are all secured through lease agreements and have overriding royalties. 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. All tenements are in good standing. 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
Exploration done by other parties	<ul style="list-style-type: none"> 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).
Geology	<ul style="list-style-type: none"> 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). 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. 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. The mineralisation shows no significant oxidation, with fresh material occurring at shallow depths
Drill hole information	<ul style="list-style-type: none"> Not applicable

CRITERIA	COMMENTARY
Data aggregation methods	<ul style="list-style-type: none">• Not applicable
Relation between mineralisation widths and intercept lengths	<ul style="list-style-type: none">• Not applicable
Diagrams	<ul style="list-style-type: none">• See diagrams included in this announcement.
Balanced reporting	<ul style="list-style-type: none">• All results are reported in this release.
Other substantive exploration data	<ul style="list-style-type: none">• Drilling, geological mapping, geophysical surveying, and metallurgical testing exist and have been reported in previous announcements
Further work	<ul style="list-style-type: none">• Targets defined will be inspected in the field.• Surface rock and/or soil samples may be collected.