

ASX: MGT

Equity Research

23rd June 2023

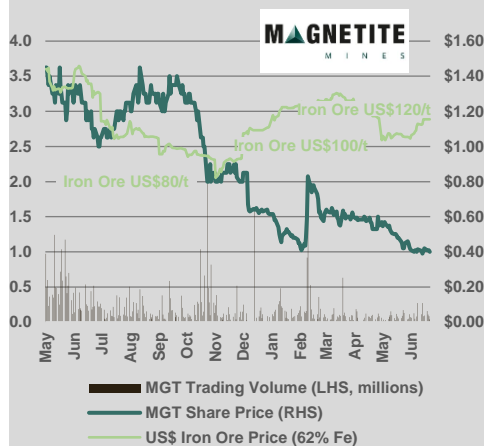
SPECULATIVE BUY

Share Price	\$0.40
Valuation	\$2.90
Price Target	\$4.50

52-Week Range	\$0.40 - \$0.90
MGT Shares Outstanding	75.84m
Unlisted Options (\$2.265, 17 Mar 2024)	0.08m
Unlisted Options (\$1.95, 27 Jun 2025)	0.14m
Unlisted Options (various, various)	2.03m
Unlisted Options (\$2.03, 14 Oct 2025)	0.29m
Unlisted Options (\$1.39, 1 Dec 2025)	1.05m
Unlisted Options (\$0.915, 15 Dec 2025)	0.60m
Unlisted Options (\$1.34, 1 Dec 2028)	0.38m
Unlisted Options (\$0.78, 1 Feb 2029)	0.17m
STI Performance Rights	1.20m
Market Capitalisation	\$30.3m
Cash (31 Mar 2023)	\$7.1m
Enterprise Value	\$23.2m
Substantial Shareholders	
National Nominees Ltd	9.69%
Citicorp Nominees Pty Ltd	2.70%
Mr Kun Liu	1.42%
Mr Siat Yoon Chin	1.36%
Mr Mark Eames	1.30%

Board & Management:

Mark Eames	Chairman
Peter Schubert	Non-Executive Director
Jim McKerlie	Non-Executive Director
Paul White	Non-Executive Director
Simon Wandke	Non-Executive Director
Dr Carmen Letton	Non-Executive Director
Tim Dobson	Chief Executive Officer
Inthu Siva	Interim Company Sec.



Magnetite Mines Limited (ASX: MGT) is focused on the development of magnetite iron ore resources in the highly prospective Braemar iron region of South Australia. The mineral resource of its flagship Razorback project located 240km from Adelaide amounts to 6.0 billion tonnes of iron ore. The Project is a planned mining operation aiming to meet accelerating market demand for premium iron ore products. The Project consists of the mine, a processing plant, road access to an existing freight rail line for haulage of the iron ore concentrate to the Port of Whyalla.

Magnetite Mines Limited

Strategic Iron Ore Soon to be in High Demand

Massive Mineral Resource: the Razorback Iron Ore Project combines a globally significant mineral resource with enviable characteristics: 6.0 billion tonnes inclusive of Ironback Hill and Muster Dam with low deleterious elements (silica, alumina and phosphorus).

Ore Reserve: based on the Razorback and Iron Peak deposits, the Ore Reserve has been updated to 2 billion tonnes. Overall, this massive ore reserve translates to a mine life in excess of 90 years (5 Mtpa product capacity Base Case) or 39 years (Expansion Option 10 Mtpa from year 5).

Competitive Advantage: From a steel manufacturing perspective, MGT's magnetite is a high-grade product with grade of 67.5-68.5% Fe and low impurities highly sought after by steelmakers to increase productivity, provide efficiencies and reduce emissions.

Development Options: given the increased mineral resource in terms of both size (6.0 billion tonnes and growing) and quality (DR grade), the optimisation study released on 20th March 2023 considered an initial 5 Mtpa concentrate production, increasing to 10 Mtpa a few years later (versus a previously envisaged 3 Mtpa to 7 Mtpa development scenario).

Government Support: the Razorback project fits well with the State Government's vision of becoming a leading global supplier of quality magnetite products for steelmaking. It is also worth noting that the financial contribution (royalties, corporate taxes, payroll taxes, excise duties, income taxes) from the project will be outstanding, estimated by a recent analysis report from BDO at \$31 billion over 30 years including \$1.6 billion for the South Australian Government and \$3.8 billion for the Australian Government.

Green Steel: as the expectation of cleaner, greener steel production becomes further embedded in the global narrative, MGT magnetite products offer a viable alternative to Direct Shipping Ores (DSO), for which most of the high-grade deposits are now significantly depleted. Its production will also be assisted by renewable energy making it even greener and more competitive.

Strategic Investors: a number of parties have been given access to a data room to undertake their due diligence of the Razorback project. One can expect some agreement with one or more of them during 2023.

Razorback Financial Modelling: we modelled the development and operation of the project in line with Base Case (5 Mtpa) and Expansion Option (5 to 10 Mtpa), then used different iron ore prices.

Razorback Valuation: based on various iron ore prices:

Iron Ore (62%) Price *	NPV _{8%}	50% Interest	30% Risked NPV	IRR
US\$100/t	\$1,048m	\$524m	\$157m	13%
Base Case: US\$115/t	\$1,734m	\$867m	\$260m	17%
US\$130/t	\$2,420m	\$1,210m	\$363m	20%

* US\$41/t premium to add for the 68.5% magnetite concentrate produced

Funding: to assist the funding of initial A\$1,540-1,882 million development capital expenditure (Base Case 5 Mtpa), we assumed that MGT will sell 50% of the Razorback project to one or more off-takers with proceeds of \$100m.

Key Share Price Catalysts: securing and de-risking critical infrastructure such as water supply and port capacity as well as progressing the development studies towards a Definitive Feasibility Study (DFS) should intensify the discussion with off-takers and project partners leading to project development pathways and funding, which will significantly de-risk the project and improve MGT's value further.

MGT Valuation: assuming an equity capital raising of A\$100m (100 million shares @ \$1.00) in FY2025 to complement an initial debt of A\$300m, we derived a valuation pre-construction of \$663m or \$2.90 per share. Expansion will be financed by cash flow and additional debt. Once in operation, the project should reach its full valuation resulting in a price of \$4.50.

Magnetite Mines Ltd (ASX: MGT) Financial Summary

Base Case: 5 Mtpa for 91 years (June 2023 Project Economics)

Key metrics

Market Information	Unit	Value
Number of Issued Shares	million	75.84
Unlisted Options (@\$2.265, expiry 17 Mar 2024)	million	0.08
Unlisted Options (@\$1.95, expiry 27 Jun 2025)	million	0.14
Unlisted Options various	million	2.03
Unlisted Options (@ \$2.03, expiry 14 Oct 2025)	million	0.29
Unlisted Options (@ \$1.39, expiry 1 Dec 2025)	million	1.05
Unlisted Options (@ \$0.915, expiry 15 Dec 2025)	million	0.60
Unlisted Options (@ \$1.34, expiry 1 Dec 2028)	million	0.38
Unlisted Options (@ \$0.78, expiry 1 Feb 2029)	million	0.17
Performance Rights	million	1.21
Fully Diluted	million	81.78
Share Price	A\$	0.400
12 month High-Low	A\$	0.40 - 0.90
Market Capitalisation	A\$m	30.3
Cash (31 Mar 2023)	A\$m	7.1
Debt (31 Mar 2023)	A\$m	0.0
Entreprise Value	A\$m	23.2

Financing Assumptions	Unit	Value
New Equity DFS (50m shares @ \$0.40 in FY2024)	A\$m	20.0
New Equity Construction (100m shares @\$1 in FY2024)	A\$m	100.0
Exercise of Options/Rights	A\$m	0.0
Number of Issued Shares Post Financing	million	227.0
New Debt (\$300m in FY2024 + \$400m in FY2025, 6% interest rate, repayments of \$50m in FY2027 and 2028 then repayments of \$100m per annum)		

Mineral Resources	Mt	Mass Rec	Fe%	SiO2 %	Al2O3 %
Razorback (11% Mass Rec cutoff)					
Indicated	1,675	15.95%	18.36	48.0	8.06
Inferred	1,570	16.09%	17.7	48.6	8.23
Total	3,245	16.02%	18.2	48.3	8.14
Ironback Hill (no cutoff)					
Inferred	1,187	-	23.2	44.4	7.2
Muster Dam (10% eDTR cutoff)					
Inferred	1,550	15.2%	18.7	49.6	8.8
Total	5,980	-	19.4	47.7	8.1

Razorback Ore Reserves	Mt	Mass Rec	Fe%	Mag %
Weathered	149	12.9%	17.9	10.7
Primary	1,828	14.8%	17.5	13.9
Probable Ore Reserves	1,977	14.6%	17.5	13.7

June 2023 Project Economics	Concentrate Produced
LOM Ore Mined	2,268.0
	14.6%
	331 Mt @ 68.5% Fe

Razorback Valuation	Iron Ore Price	NPV @ 8%	50% Int. 30% Risked	IRR	
Low Case	US\$100/t	\$1,048m	\$524m	\$157m	13%
Base Case	US\$115/t	\$1,734m	\$867m	\$260m	17%
High Case	US\$130/t	\$2,420m	\$1,210m	\$363m	20%

MGT Sum of the Parts Valuation	A\$m	Per Share
Razorback Project (50% interest, 30% risked NPV)	260.1	\$1.15
Expansion (10 Mtpa, 50% interest, 10% risked NPV)	194.5	\$0.86
Exploration Upside / Other projects (100%)	8.0	\$0.04
Cash (31 Mar 2023)	7.1	\$0.03
New Equity DFS (50m shares @ \$0.40 in FY2024)	20.0	\$0.09
Proceeds from 50% project interest sale	100.0	\$0.44
New Equity Construction (100m shares @\$1 in FY2024)	100.0	\$0.44
Corporate Costs	(27.2)	(\$0.12)
Base Case Valuation	662.5	\$2.92

Financial Statements

Profit & Loss (A\$m)	Financial Year ending 30 June				
	2022A	2023F	2024F	2025F	2026F
Revenue	0.2	0.2	0.0	412.9	573.5
Operating Costs	(1.4)	(2.5)	(16.5)	(243.1)	(316.9)
Royalties	0.0	0.0	0.0	(16.5)	(22.9)
Overhead Costs	(1.9)	(2.1)	(2.1)	(2.2)	(2.2)
Other Income/Costs	(0.3)	0.0	0.0	0.0	0.0
EBITDA	(3.4)	(4.4)	(18.7)	151.2	231.5
Depreciation	(0.1)	(0.1)	(1.2)	(25.0)	(58.4)
Net Interest	(0.1)	0.1	(0.1)	(18.0)	(42.0)
Tax and Other	0.0	0.0	0.0	(84.5)	(117.3)
Profit	(3.7)	(4.4)	(20.0)	23.7	13.8

Cash Flow (A\$m)	2022A	2023F	2024F	2025F	2026F
Net Profit	(3.7)	(4.4)	(20.0)	23.7	13.8
+/- Adjustments	0.0	0.0	1.3	43.0	100.4
+/- Working Capital	2.8	0.7	(1.9)	(56.9)	(23.9)
+/- Other	(1.5)	(0.4)	0.0	(20.6)	(8.0)
Cash Flow from Operations	(2.3)	(4.1)	(20.5)	(10.9)	82.2
Net Capital Expenditure	(10.0)	(10.4)	(256.6)	(500.7)	0.0
Cash Flow from Investing	(10.0)	(10.4)	(256.6)	(500.7)	0.0
Net proceeds from Debt	(0.1)	0.1	297.9	382.0	(42.0)
Changes in Share Capital	16.1	(0.2)	20.0	100.0	0.0
Dividends	0.0	0.0	0.0	0.0	0.0
Other Financing Cashflow	(1.0)	0.0	(1.2)	(6.0)	0.0
Cash Flow from Financing	15.1	(0.1)	316.7	476.0	(42.0)
Net Cash Change	2.8	(14.6)	39.6	(35.6)	40.2

Balance Sheet (A\$m)	2022A	2023F	2024F	2025F	2026F
Cash	19.3	4.8	44.4	8.8	49.0
Other Current Assets	0.7	0.0	1.4	125.5	172.6
Total Current Assets	20.1	4.8	45.7	134.3	221.6
Property, Plant & Equipment	0.1	0.0	255.4	731.1	672.7
Exploration, Evaluation & Dev.	25.2	35.7	35.7	35.7	35.7
Non-Current Assets	0.3	0.3	0.3	0.3	0.3
Total Non-Current Assets	25.7	36.0	291.4	767.1	708.7
Total Assets	45.8	40.8	337.1	901.4	930.3
Equity	89.6	89.4	108.2	202.2	202.2
Reserves	12.1	12.1	12.1	12.1	12.1
Retained Earnings	(62.3)	(66.7)	(86.7)	(63.0)	(49.2)
Total Equity	39.3	34.8	33.6	151.3	165.1
Current Debt	0.0	0.0	0.0	0.0	50.0
Account Payables	3.9	3.9	3.4	49.9	65.1
Other Liabilities	0.4	0.0	0.0	0.0	0.0
Total Current Liabilities	4.3	3.9	3.4	49.9	115.1
Lease Liabilities	0.1	0.1	0.1	0.1	0.1
Non-current Debt	2.0	2.0	300.0	700.0	650.0
Total Non-current Liabilities	2.1	2.1	300.1	700.1	650.1
Total Liabilities	6.4	6.0	303.5	750.1	765.2
Total Equity + Liabilities	45.8	40.8	337.1	901.4	930.3

Profitability indicators	2022A	2023F	2024F	2025F	2026F
EBITDA margin	0.0%	0.0%	0.0%	36.6%	40.4%
Liquidity	2022A	2023F	2024F	2025F	2026F
Quick Ratio	0.2	0.0	0.0	2.1	1.3
Current Ratio	0.2	0.0	0.4	2.5	1.5
Capital structure	2022A	2023F	2024F	2025F	2026F
Equity ratio	2.0	2.2	0.3	0.2	0.2
Debt / Assets	0.0	0.0	0.9	0.8	0.8
Debt / EBITDA	0.0	-0.5	0.0	4.6	3.0
DSCR	n/a	n/a	n/a	3.6	2.5

Source: Evolution Capital estimates

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All dollar amounts are in Australian dollars unless otherwise specified.

1. MGT Valuation

Razoback Project Valuation

We modelled the development and operation of the project in line with the June 2023 Project Economics Base Case (5 Mtpa product) and Expansion Option (10 Mtpa product) parameters, then used different iron ore prices.

To reduce the capital expenditure, we assumed that 50% of the project is sold by MGT to one or more future customers. The proceeds from this sale are assumed to be \$100 million to be assigned to project development.

We also assign a risk factor of 30% placing the project valuation at the time of the DFS (Definitive Feasibility Study) results announcement (i.e. about 12 month from now).

Table 1.1 summarise the Razoback project NPV valuation using different iron ore price assumptions.

Table 1.1 – Razoback Project Valuation

Iron Ore Price (62% Fe)*	NPV @ 8%	50% Interest	Risk Factor	Risked NPV	IRR
<i>US\$/t</i>	<i>A\$m</i>	<i>A\$m</i>	<i>%</i>	<i>A\$m</i>	<i>%</i>
\$100/t	\$1,048	\$524	30%	\$157	13%
\$115/t (base case)	\$1,734	\$867	30%	\$260	17%
\$130/t	\$2,420	\$1,210	30%	\$363	20%

* MGT magnetite product is assumed to be sold with a US\$41/t premium for 68.5% Fe

The magnetite concentrates at 67.5%-68.5% Fe sold by MGT will attract an assumed of quality adjustment premium of US\$41/t above the 62% Fe iron ore benchmark price as per the estimate from Wood Mackenzie (MGT ASX announcement 9 June 2023).

We note also that our financial modelling and in particular our operating cost assumptions result in a total operating cost of US\$96/t of concentrate which in line with MGT estimates of US\$87-96/t of concentrate (Base Case) and US\$83/t vs. US\$81-89/t (Expansion Option) included in the 9 June 2023 ASX announcement.

Razoback Project Financing

To finance the significant capital expenditure to develop the Razoback project and awaiting announcements from the company regarding agreements with third parties, we have made the following assumptions:

- MGT to sell a 50% interest in the project to one or more off-takers
- Sale of proceeds of the 50% interest sale of \$100 million
- A\$20 million equity capital raising in FY2024 (50 million shares at \$0.40)
- A\$100 million equity capital raising in FY2025 (100 million shares at \$1.00)
- A\$300 million initial debt package in FY2024
- Capital expenditure of A\$855.5 million representing 50% of the first stage development capital

To complement the \$7 million cash balance at the end of the March 2023 quarter, we assumed a capital raising of \$20 million (50 million shares at \$0.40) to fund the Definitive Feasibility Study. To assist the funding of the project construction, we assumed a \$100 million equity capital raising (100 million shares at \$1.00).

MGT Sum of the Parts Valuation

Table 1.2 summarises the sum of the parts valuation for Magnetite Mines. We used a risk factor of 30% considering that the project is pre-DFS (Definitive Feasibility Study) and pre-construction.

Table 1.2 – MGT Sum of the Parts Valuation

Magnetite Mines Ltd (ASX: MGT)	A\$m	Per Share
Razorback Iron Ore Project - 5 Mtpa (50% MGT, 30% risked NPV)	\$260.1	\$1.15
Expansion to 10 Mtpa in year 6 (50% MGT, 10% risked NPV)	\$194.5	\$0.86
Exploration Upside / Other Projects	\$8.0	\$0.04
Cash	\$7.1	\$0.03
New equity DFS (50 m shares @ \$0.40 in FY2023)	\$20.0	\$0.09
Proceeds from 50% interest sale	\$100.0	\$0.44
New equity Construction (100 m shares @ \$1.00 in FY2025)	\$100.0	\$0.44
Corporate costs	(\$27.2)	(\$0.12)
Base Case Valuation	\$662.5	\$2.92

Source: Evolution Capital estimates

2. Magnetite Mines' Strategy

MGT's development approach for the Razorback Iron Ore Project is a staged approach producing an attractive high-grade concentrate and balancing the minimum amount of capital with the requirement to deliver an economic and robust pathway to first ore, using existing infrastructure to reduce upfront capital costs. The Project's large resources support a scalable operation with substantial expansion potential. Connection to the Southeast Australian electricity grid allows access to low-cost power with a progressively renewable supply mix (forecast to be 100% renewable by 2030) and decreasing emissions profile.

The Company has recently delivered optimisation studies results with the key outputs as follows:

1. Best-case Project configuration confirmed as a staged development commencing with Stage 1 capacity of 5Mtpa concentrate output, with potential to expand to 10Mtpa after 5 years.
2. New JORC-compliant Probable Ore Reserve calculated with a 340% increase in tonnage from 473Mt to 1,615Mt (March 2023) based on a 5Mtpa production scenario, then updated to 1,977 Mt (June 2023) including Iron Peak.
3. DFS-quality metallurgical studies completed, substantially de-risking process design, flowsheet; equipment selection – all based on well-proven, industry standard technologies.
4. 100% of Stage 1 concentrate production to be DR-grade, pellet feed quality: 68.5% Fe with low major impurities (3.4% combined silica + alumina). This feature establishes Razorback as a key contributor of the Green Steel supply chain.
5. Stage 1 to take advantage of existing product transport infrastructure with road transport planned to rail siding, and then rail to port. MoU with SIMEC firms Whyalla as logical Stage 1 port for Razorback concentrate export.
6. Renewable energy supplied from South Australia's electricity grid confirmed, with transmission and connection design well advanced with engineering consultant GHD with power supply capacity at Bunday Substation verified by South Australian network provider ElectraNet.
7. Three technically and economically viable Project water supply options costed. Preferred option is currently undergoing commercial in confidence negotiations.

MGT is now completing mining studies on the recently upgraded high-grade Iron Peak Resource to support Ore Reserve estimation and enable completion of financial modelling for the new Project configuration with results expected in the near future.

The Company has also commenced a value engineering (VE) program to reduce capital and operating costs for the new Project configuration prior to DFS-level engineering. Other priorities include securing the preferred water supply option, producing concentrate samples for customer assessment, completing geotechnical field work to support DFS-level engineering, and advancing negotiations with infrastructure partners.

This forecast demand for high-grade concentrates, along with associated pricing premiums, is now facilitating the economic development of the Razorback Iron Ore Project. MGT is assessing both the expected pricing premiums and the decarbonisation benefits that result from the use of Razorback concentrates to produce steel. Our previous valuation used a fixed US\$25/t high-grade premium assumption. There is considerable upside for the premium to increase before the project construction and over the life of the project as the steel market greenifies, See Section 3. Iron Ore Magnetite Market Developments.

It is also making sure the Project meets both the economic and Environmental, Social and Governance (ESG) criteria demanded by the market and necessary to attract investment.

Increased Mass Recovery

Mass recovery (or weight recovery) is the most important measure of mineralisation quality in the evaluation of magnetite deposits and is the percentage of the head (feed) mineralisation by weight that is recoverable by concentration processes. Higher mass recovery enables more magnetite concentrate to be produced per tonne of plant feed.

The updated mass recovery for Iron Peak at 19.4% represents a substantial 15% increase over previous Mineral Resource Estimates, making Iron Peak a standout deposit not only in terms of the Magnetite Mines portfolio, but also when compared with all currently announced Braemar Iron Formation resource estimates. The mass recoveries amount to 14.7% and 14.7% respectively for the Central Eyre deposit from Iron Road Ltd (ASX: IRD, derived from 29 Jan 2021 ASX announcement) and the Hawsons deposit from Hawsons Iron Ltd (ASX: HIO, Probable Ore Reserve, <https://hawsons.com.au/hawsons-iron-project/>).

Table 2.1 –Iron Peak Mineral Resource

Classification	Million Tonnes (Mt, dry)	Mass Rec (eDTR%)	Fe%	SiO ₂ %	Al ₂ O ₃ %	P%	LOI%	Magnetite%
INDICATED	286	19.3	18.5	47.8	8.2	0.16	5.8	16.1
INFERRED	216	19.5	17.9	48.3	8.3	0.16	5.9	15.8
TOTAL	503	19.4	18.2	48.0	8.2	0.16	5.8	16.0

Figures quoted at a 11% Mass Recovery cut-off

Source: MGT 9 Feb 2023 ASX announcement

Superior Metallurgy

The importance of the Iron Peak deposit becomes evident when considered in light of recent metallurgical testwork results. As shown in Table 2.1 below, Iron Peak has produced the highest-grade concentrate products to date for the Project: >69% Fe with less than 3% major impurities. This is considered premium-grade feed for Direct Reduction (DR) pellet facilities, extremely scarce in the current market, and increasingly in demand as DRI facilities replace carbon-

intensive blast furnace operations globally. The Iron Peak sample also exhibit the lowest average bond ball work index at 6.8kWh/t (compared to a typical Pilbara at 24kWh/t) and the lowest abrasion index (0.05), translating to lower processing costs when compared with samples from other parts of the Project resource base.

Table 2.1 – Summary of concentrate product results to-date

Sample	Fe (%)	SiO ₂ (%)	Al ₂ O ₃ (%)	TiO ₂ (%)	SiO ₂ +Al ₂ O ₃ +TiO ₂
RAZORBACK TEST 1	68.0	3.79	0.47	0.067	4.33
RAZORBACK TEST 2	68.5	3.31	0.42	0.064	3.79
RAZORBACK TEST 3	67.1	4.63	0.57	0.080	5.28
IRON PEAK TEST 1	69.7	2.34	0.29	0.034	2.66
AVERAGE	68.3	3.52	0.44	0.061	4.02

Final flotation tail testwork results; grind size P80 = 44microns
Source: MGT

Product Quality

100% of Stage 1 concentrate to be DR-grade, pellet feed quality: 68.5% Fe with low major impurities (3.0% combined silica + alumina). This feature establishes Razorback as a key contributor of the Green Steel supply chain.

3. Iron Ore Magnetite Market Developments

Iron Ore: Hematite v Magnetite

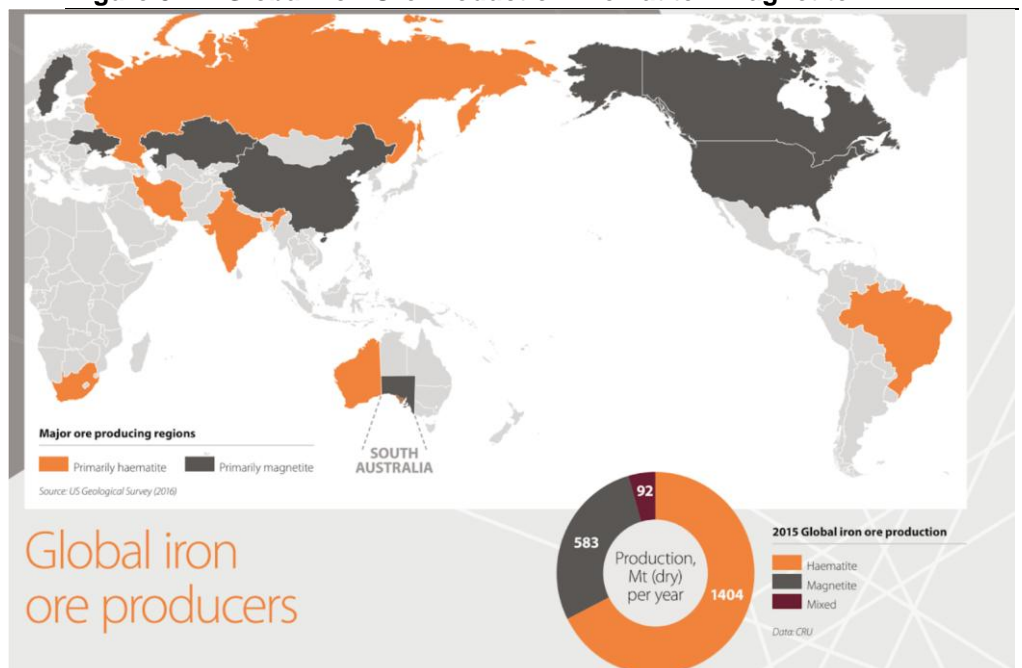
Iron ore is a mixture of chemical compounds of iron (Fe) and other minerals.

The chemical compounds of iron ore suitable for steelmaking are essentially ferric oxides – a mixture of iron with oxygen such as Fe₂O₃ (hematite) or Fe₃O₄ (magnetite).

The most commonly used iron-bearing minerals are magnetite and hematite.

The Pilbara region in Western Australia is rich in high-grade, predominantly hematite ore, known also as Direct Shipping Ore (DSO). DSO passes through a simple crushing, screening (milling) and blending process before it is shipped overseas for use in steel production. DSO, when mined, typically has iron content of between 56% Fe and 65% Fe.

Figure 3.1 – Global Iron Ore Production: Hematite v Magnetite



Magnetite ore generally has an iron content of less than 40% Fe and is therefore unsuitable for steelmaking in its natural form. As its name implies, the iron in magnetite is magnetic and therefore can be separated from waste material by the application of a magnetic field.

Magnetite grain size and its degree of integration with the host rock determines the grind size to which the ore must be crushed and ground to enable effective magnetic separation.

The energy input requirement is commensurate with the level of crushing and grinding.

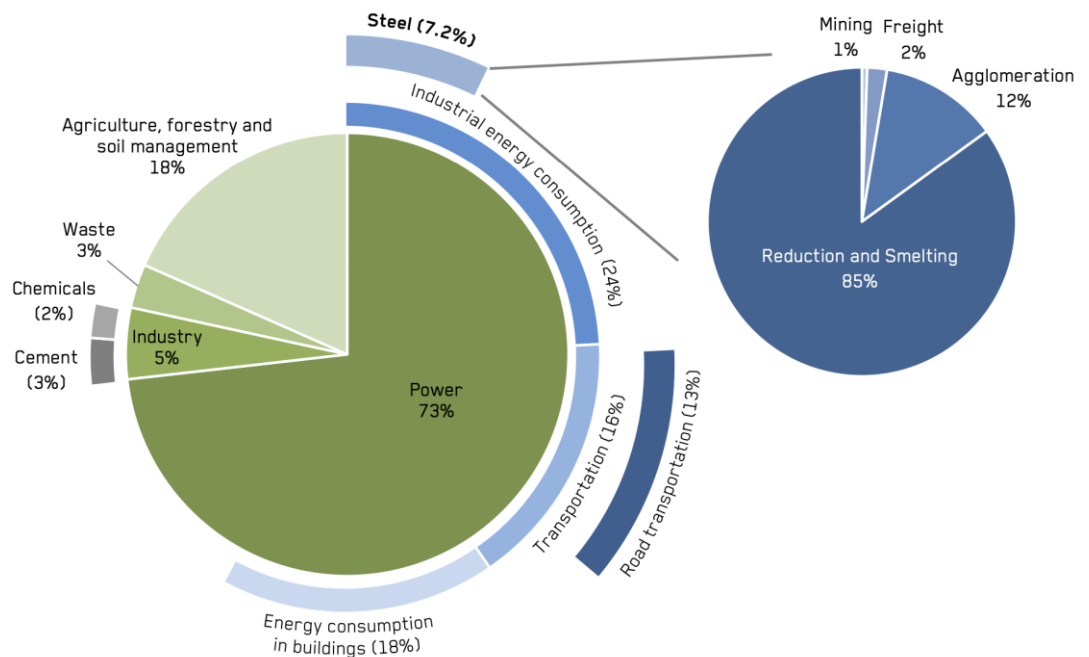
South Australia's magnetite ore is characteristically soft (low hardness) with typically large grain sizes in comparison with magnetite ore from other identified global magnetite regions.

The magnetite concentrate that can be produced from South Australian magnetite is a high-grade product to greater than 65% Fe with low impurities that is highly sought after by steelmakers to increase productivity, provide efficiencies and reduce emissions.

Decarbonisation of the Steel Manufacturing Industry

Energy constitutes a significant portion of the cost of steel production. The steel industry significantly increased its share of global emissions in the last 20 years and currently represents more than 7.2% of global CO₂ emissions. 85% of the emissions from steel making are generated by the reduction and smelting of ore.

Figure 3.2 – Global Carbon Dioxide Emissions



Source: 1. Left pie chart: Our World in Data (2020), numbers may not add up due to rounding.
2. Right pie chart: Data from IEA and Wood Mackenzie.

The steel making industry is one of the largest consumers of coal on the planet. For every tonne of steel produced, around two tonnes of greenhouse gases are emitted.

Global steel production is currently heavily reliant on coal. Almost 70% of the steel manufactured globally uses coal. Magnetite concentrate is exothermic, releasing heat during processes for steelmaking, requiring less external energy inputs (e.g. coal). The use of magnetite concentrates in sinter feed blends and pellet feed is widespread. Chinese steel mills are receptive to magnetite products supplied from foreign sources.

Steelmakers seek efficiencies to reduce, manage and control emissions from the steelmaking process. The use of magnetite concentrate in place of hematite can reduce the emissions intensity by as much as 30% in the overall steelmaking process.

In parallel, Direct Shipping Ore reserves are declining, coupled with increasing levels of deleterious impurities which increases steelmaking costs. This indicates reserve depletion of easily accessible, cheaply extracted DSO. Global demand is increasing for high-grade, low impurity feedstock for steelmakers.

In this context, magnetite iron ore feed has an increasing role to play as a feed in blast furnaces. In the same time, the development of direct reduced iron (DRI) processes will require high-grade magnetite feed.

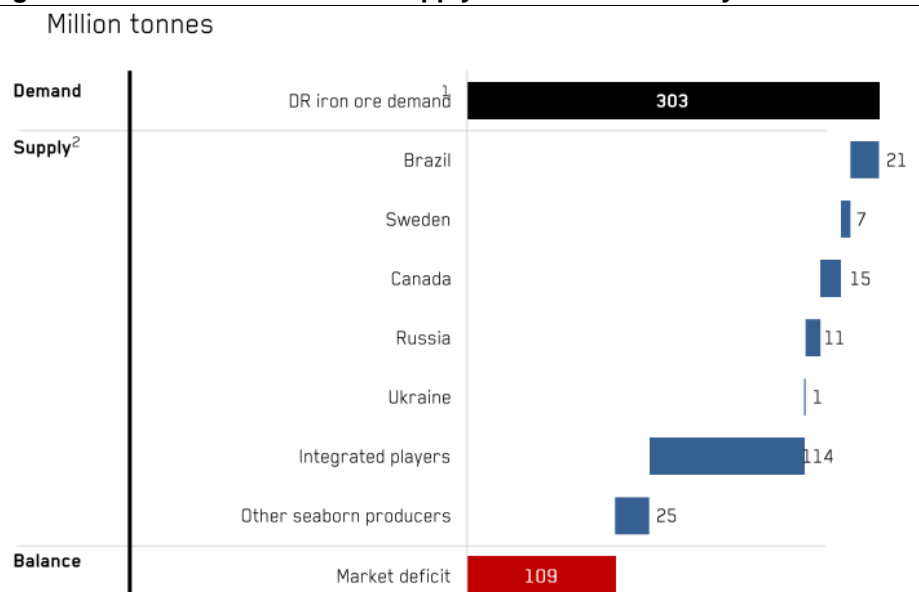
According to Bloomberg New Energy Finance (BNEF), the transition from blast furnaces to direct reduced iron (DRI) processes will push the demand for DR-grade iron ore to increase 10-fold to reach 60% DRI by 2050.

On a shorter horizon and according to analysis from Champion Iron Ltd (ASX: CIA, A\$4 billion market cap), the market deficit for DR-quality iron ore is expected to be approximately 109 Mt by 2031 as the global market demand increases to exceed 300 Mtpa.

The potential suppliers of DR-quality iron ore are expected to be concentrated in a few countries and Australia has the opportunity to grow its position in that market.

Market deficit means pricing pressure towards higher premium for DR-quality iron ore.

Figure 3.3 – DR-Grade Iron Ore Supply/Demand Balance by 2031



Source: Champion Iron Limited

The South Australian Magnetite Advantage

Magnetite ores require initial crushing and screening like DSO, but then undergo successive stages of additional processing to produce a magnetite concentrate or pellets.

Unique mineralogical characteristics consisting of relatively soft ore and well-formed crystals define much of South Australia's magnetite resulting in a concentrate that has comparatively lower input costs, higher iron grade and lower levels of deleterious impurities such as alumina, silica, phosphorus and sulphur. South Australia's magnetite resources projects benefit from having a highly sought-after combination of softness, integration with host rock and grain size to be globally competitive. Large grain sizes are not a feature of the Razorback

project nor Braemar Iron Formation ores. The mineralisation is made of fine, but well-formed crystals with little intergrowth textures, therefore once crystals are liberated, they produce a very clean, high-grade concentrate.

Beyond the geology, power is another key competitive advantage. Producing magnetite consumes significant amounts of energy. If most or all of that energy comes from cheap green renewables, then any magnetite project located in South Australia has a huge advantage versus others using alternative power sources in their iron ore production. **70% of South Australia’s power is from renewables today and the State expects to be at 100% by 2030.**

Premium Products Attract Premium Prices

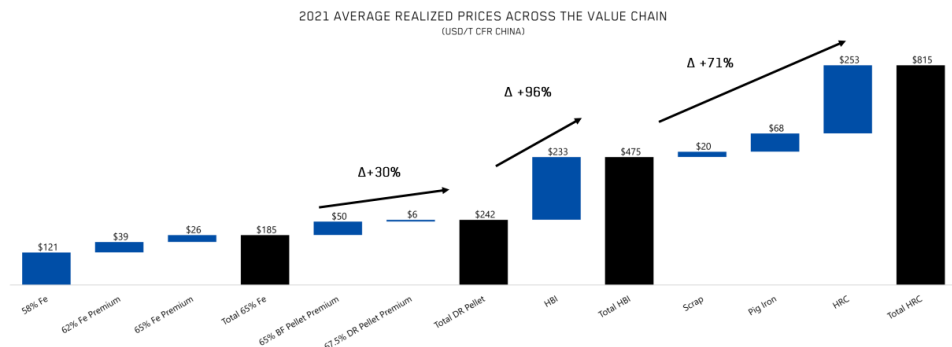
Further processing of magnetite concentrate can produce sinter or pellets that can be fed directly into blast furnaces and electric arc furnaces, including direct reduction iron (DRI) steelmaking plants. Pellets and concentrates are premium products that attract higher prices from steelmakers.

Premiums can reach up to US\$90/tonne, which means a potential doubling of revenue for some magnetite products.

Figure 3.4 illustrates the value-add of iron ore products as the iron content increase.

Figure 3.4 – Iron Ore Products Value Chain

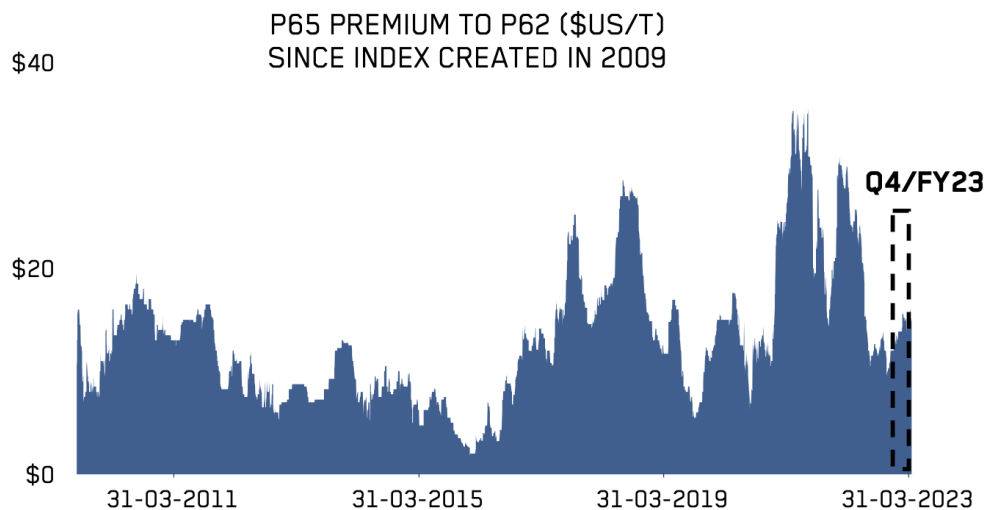
Material value captures in the steel value chain occurs between pellet and HBI as well as the HRC stage



Source: Champion Iron

Figure 3.5 illustrates the increasing the demand pressure on higher quality iron ore concentrate. With higher iron ore content, higher premiums are in order.

Figure 3.5 – Iron Ore Product Pricing – P65



Source: Champion Iron, Platts data

The magnetite products that are expected to be in demand during the next five to 10 years include:

- high-grade concentrates for use in sinter blends
- high-grade concentrates for blast furnace pellet feed blends, and
- very high-grade concentrates (>67% Fe, and <3% silica/alumina) for use as feed stock for direct reduction pellet production.

In the case of sinter and blast furnace pellet applications, magnetite concentrates will increasingly be needed to displace China's domestic concentrates as reserves are depleted and operations are closed due to uncompetitive costs and increasing environmental regulation. An opportunity exists for South Australia's magnetite products to meet this expected shortfall.

South Australian Government Support

The South Australian government's vision is to see the State becoming a leading global supplier of quality magnetite products for steelmaking by 2030.

South Australia aims to secure billions of dollars in investment to unlock magnetite resources and increase magnetite production to 50 million tonnes per annum by 2030.

To reach this goal, the South Australian government is pursuing the following actions:

- Engaging with stakeholders and industry partners
- Forging private-public partnerships to build transformational bulk-commodity infrastructure within a multi-user framework
- Supporting a strong and sustainable Australian steel industry

Government support means also significant revenues:

- Additional average annual Gross State Product contributions from the project are \$1.17 billion and \$1.01 billion for construction and operations phases, respectively; this represents over \$33 billion for a life of mine at 30 years.
- Direct operational phase employment of over 400 South Australians extended with flow-on SA employment reaching 2,446 through production and consumption-induced activities.
- Assuming an 8% direct employment target in Peterborough of 36 full time employees (FTE), and with flow-on employment outcomes (22 FTE), the local unemployment rate could fall from 11.3% to less than 1% (based on 2021 census results, assuming direct consumption of unemployed people only)
- Over thirty years of production at 5Mtpa, financial contributions to the South Australian Government exceed \$1.6bn, achieved primarily through royalties (\$50m/year) with further contribution through payroll tax and mining lease fees.
- Excise duties and income tax payable by salaried employees contribute \$462m over the 30-year operations phase, with company tax liability being assessed in current internal operational modelling.

Recent Magnetite Projects Development Activity in Australia

Listed below are the recent announcements made in relation to the development of magnetite projects in Australia:

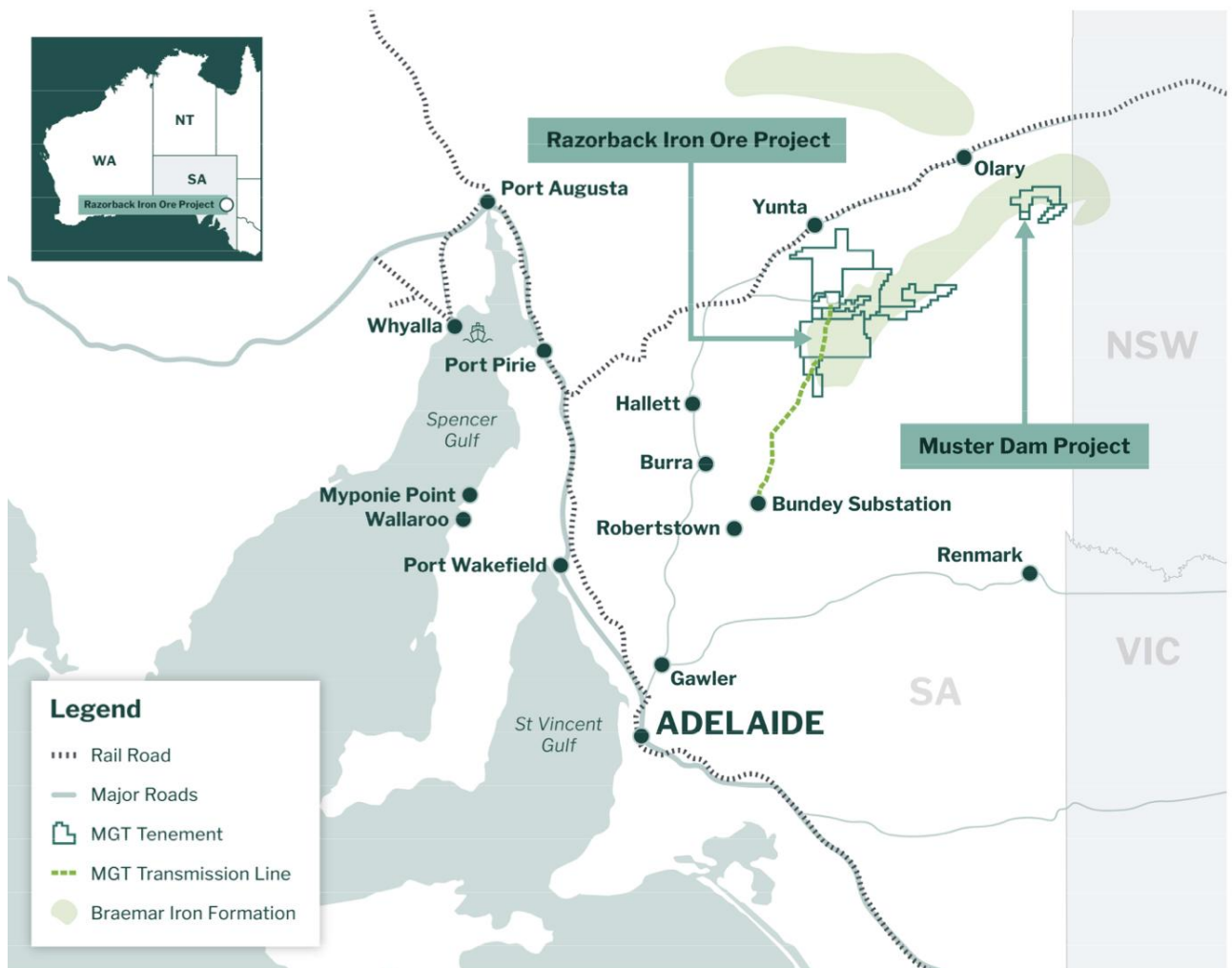
- Fortescue Metals Group Limited's (ASX: FMG) Iron Bridge 22mtpa magnetite project under construction (capex of US\$3.6 to US\$3.8 billion) in the Pilbara with commissioning expected in the March quarter 2023 (AGM presentation 22 November 2022). First ore fed into processing plant (31 Oct 2022)
- Fortescue Metals Group Ltd (ASX: FMG) and Sinosteel have signed a binding Memorandum of Understanding (MoU) to complete a rapid project assessment of Sinosteel's Midwest Magnetite Project, with the assessment to include a rail and port development at Oakajee. At the conclusion of the 12-month rapid project assessment and subject to the outcome of that process, FMG has the option to acquire up to 50% of the Midwest Magnetite Project and up to 100% of the proposed port and rail infrastructure project (ASX announcement 21 January 2022)
- Mineral Resources Limited (ASX: MRL) is drilling at the Koolyanobbing Magnetite project to scope the resource potential for economic development (ASX announcement 26 October 2021)

- Macarthur Minerals Limited (ASX: MMS) Lake Giles Positive Feasibility Study announcement (ASX announcement 21 March 2022)
- Hancock Prospecting executed a JV agreement on 7 April 2022, to acquire 30% of the Mt Bevan project (neighbouring project to Mount Ida) with Legacy Iron Ore Ltd (ASX: LCY) now 42% and Hawthorn Resources Ltd (ASX: HAW) now 28%. The JV partners are currently undertaking a Pre-Feasibility Study (ASX announcement 3 May 2022)
- Cashmere Iron – Cashmere Downs project PFS expected Q3 2022 (Global Iron Conference presentation 29 July 2022)

4. Magnetite Mines Projects

Project Location

Figure 4.1 – Razorback Project Location and Existing Infrastructure



Source: MGT

The Razorback Project, is located in close proximity to existing infrastructure, being positioned 40km from rail and sealed roads, 75km from the nearest high voltage powerline and 110km from the mining town of Broken Hill. The main rail line comes from NSW down across South Australia to the ports of Port Pirie, Port Augusta and Whyalla which is around 315km away. Initially trucking is envisaged from the processing plant to the rail line. With capacity expansion, raiing from the mine will be developed.

Updated Project Configuration and Capacity

Table 4.1 – Razorback Project Configurations

Project Element	Base Case	Expansion Option ^a
Process Plant Feed capacity	25 Mtpa	25Mtpa → 67Mtpa
Concentrate production ^b	5 Mtpa	5Mtpa → 10Mtpa
Mining	Contract - Truck/shovel	Contract - Truck/shovel
Processing	1x 25Mtpa feed processing module	1 x 25Mtpa feed processing module 1x 42Mtpa feed processing module TOTAL: 67Mtpa processing capacity
Logistics	Road haulage to rail siding Rail freight to Whyalla Port Transhipping to Capesize vessels for international export	5Mtpa: Road haulage to rail siding, rail freight to Whyalla Port 10Mtpa: Rail freight from site to Whyalla Port Transhipping to Capesize vessels for international export
Power	275kV transmission line	275kV transmission line (unchanged)
Water	Seawater and wastewater options available	Seawater duplication of pipeline required

a. The project update assumes the expansion stage occurs in year 5

b. Concentrate production capacities are averages that may not be always realised due to ore body variability

Source: MGT

The revised production scenarios described in the 9th June ASX announcement and summarised in Table 5.1 remain largely in line with previous iterations assessed by MGT: conventional open pit mining followed by conventional magnetite ore processing to produce a high-grade concentrate product (67.5% to 68.5% Fe) and a tailings stream for on-site storage. Concentrate truck haulage to existing rail infrastructure is planned for the 5Mtpa (Base Case) operation, with rail transport to the port at Whyalla for export via transhipping. The installation of a rail spur to site is planned for the proposed Expansion Option increase in production to 10Mtpa.

Geology and Mineralisation

The Razorback Project covers sedimentary lithologies of the Adelaide Geosyncline, a linear north-south to north-east trending tectonic rift basin comprising sediments deposited during the late Proterozoic and early Cambrian Eras. The host rock to the magnetite at Razorback is Neoproterozoic glaciogenic meta-sediment of the Braemar Iron Formation.

Mineralisation within the Braemar Iron Formation forms a simple dipping tabular body with minor faulting, folding and intrusives. Grades, thickness, dip and outcropping geometry remain very consistent over kilometres of strike. While the bedded magnetite has the highest in-situ iron content, typically 19- 35% Fe, the tillitic unit, at typically 15-26% Fe, is diluted by the inclusion of lithic fragments such as granite and metasedimentary drop stones.

Mineral Resource

The Razorback Project comprises the Razorback Ridge and Iron Peak deposits, which combined contain 3.2 billion tonnes of Indicated and Inferred Resources (JORC 2012). Both production scenarios have been generated from mine schedules that produce ~2.3 billion tonnes of life-of-mine ore from these Mineral Resources. For the Base Case 85.2% is in the Indicated Resource category and 14.8% is Inferred. For the first ten years of production, 83% of the contributing run-of-mine (ROM) material is currently categorised at Indicated and 17% Inferred. For the Expansion Case 85.2% is Indicated and 14.8% Inferred making up the life of mine (LOM) mining schedule and the first ten years of proposed production composed of 91.3% Indicated and 8.7% Inferred.

The Mineral Resource Estimate at a 11% eDTR cut-off grade for the Razorback Iron Ore Project is summarised in Table 4.2 as well as the mineral resource of the recently acquired Muster Dam project.

Table 4.2 – Magnetite Mines Mineral Resource

Razorback Iron Ore Project (Razorback and Iron Peak Combined) ^a								
Classification	Tonnes (Mt)	Mass Rec (eDTR%)	Fe %	SiO ₂ %	Al ₂ O ₃ %	P %	LOI %	Magnetite %
INDICATED	1,675	15.95	18.36	48.02	8.06	0.18	5.46	15
INFERRED	1,570	16.09	17.74	48.6	8.23	0.18	5.53	15.6
TOTAL	3,245	16.02	18.06	48.3	8.15	0.18	5.49	15.3

Results presented at 11% eDTR cut-off

Ironback Hill ^{tb4}								
Classification	Tonnes (Mt)	Mass Rec (eDTR%)	Fe %	SiO ₂ %	Al ₂ O ₃ %	P %	LOI %	Magnetite %
INFERRED	1,187	-	23.2	44.4	7.2	0.21	5.4	12.9

Results presented with no cut-off

Muster Dam Iron Project ^{tc5}								
Classification	Tonnes (Mt)	Mass Rec (DTR%)	Fe%	SiO ₂ %	Al ₂ O ₃ %	P%	LOI%	Magnetite %
INFERRED	1,550	15.2	18.7	49.6	8.8	0.2	2.8	-

Results presented with 10% Mass Recovery cut-off

Combined Mineral Resource Estimate								
Classification	Tonnes (Mt)	Mass Rec (eDTR%)	Fe%	SiO ₂ %	Al ₂ O ₃ %	P%	LOI%	Magnetite %
INFERRED & INDICATED	5,982	-	19.4	48.1	8.2	0.2	4.8	-

Results presented as weighted averages of items A, B and C

Source: MGT

Ore Reserve

The Ore Reserve of 1,615 Mt announced on 20th March 2023 has been updated to include the Iron Peak deposit and now amounts to 1,977 Mt as summarised in Table 4.3.

Table 4.3 – Ore Reserves (Razorback & Iron Peak deposits)

Razorback Deposit	Tonnes Mt	Mass Recovery (eDTR) %	Fe %	Mag %
Weathered	149	12.9	17.9	10.7
Primary	1,828	14.8	17.5	13.9
Total	1,977	14.6	17.5	13.7

Source: MGT

The ore reserve represents only 33% of MGT's global mineral resource and include 100% of the indicated mineral resource. As such, it appears that most of the inferred mineral resource should convert into ore reserve subject to additional drilling.

Production and Exploration Upside

With the ability to convert most of the global mineral resource into ore reserve, there is significant scope to increase both mine life and production rate.

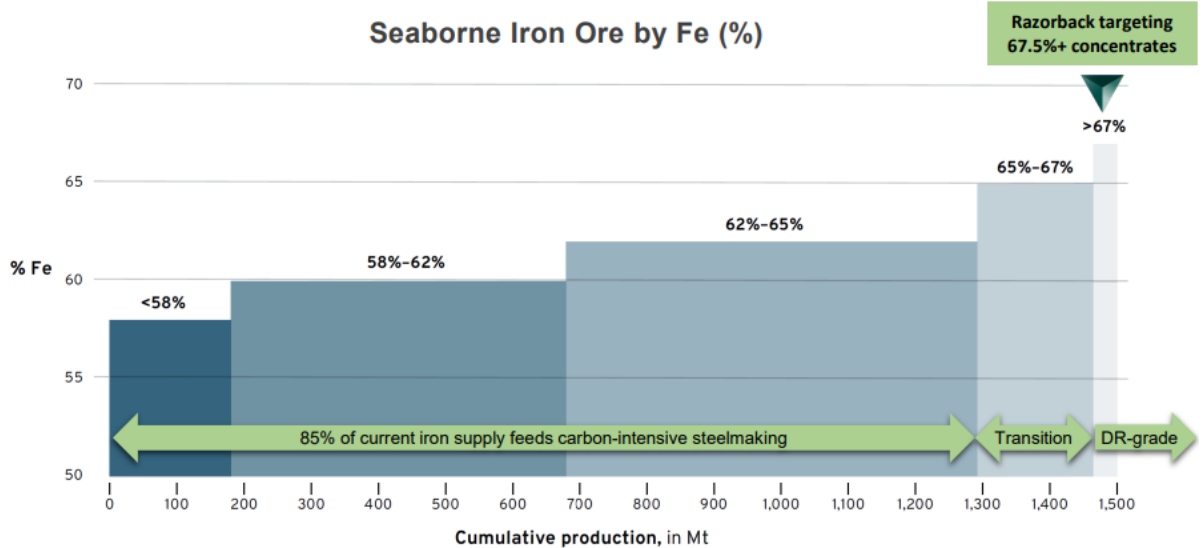
Also subject to further drilling, aeromagnetic surveys suggests that significant upside exists for delineating further mineral resources.

Iron Concentrate Product

Figure 4.2 highlights the current state of the iron ore markets and the current niche state of high-quality iron ore products.

As the market evolves towards reducing CO₂ emissions, the “niche” market is expected to experience tremendous growth.

Figure 4.2 – Razorback Iron Ore Product Targets



Source: Magnetite Mines, Platts data

5. Directors & Management Team

From the bio detailed in our previous report, we would like to highlight that the Board and management team have a strong background in developing large projects. Tim Dobson the CEO was the President of the giant Ambatovy Nickel project in Madagascar that Sheritt International built for US\$8bn and Simon Wandke ran Arcelor Mittal’s highly successful mining business (iron ore and coal).

6. Investment Risks

MGT is exposed to a number of risks including:

- **Geological risk:** the actual characteristics of an ore deposit may differ significantly from initial interpretations.
- **Resource risk:** all resource estimates are expressions of judgement based on knowledge, experience and industry practice. Estimates, which were valid when originally calculated may alter significantly when new information or techniques become available. In addition, by their very nature, resource estimates are imprecise and depend to some extent on interpretations, which may prove to be inaccurate.
- **Commodity price risk:** the revenues MGT will derive mainly through the sale of iron ore magnetite products exposing the potential income to commodity price risk. The price of iron ore fluctuates and is affected by many factors beyond the control of MGT. Such factors include supply and demand fluctuations, technological advancements and macro-economic factors.
- **Exchange Rate risk:** The revenue MGT derives from the sale of iron ore products exposes the potential income to exchange rate risk. International prices of commodities are denominated in United States dollars, whereas most of operating costs are in Australian dollars and the financial reporting currency of MGT is the Australian dollar, exposing the company to the fluctuations and volatility of the rate of exchange between the AUD and USD as determined by international markets.

- **Mining risk:** A reduction in mine production would result in reduced revenue.
- **Processing risks:** A reduction in plant throughput would result in reduced revenue. In all processing plants, some metal is lost rather than reporting to the valuable product. If the recovery of metal is less than forecast, then revenue will be reduced.
- **Operational cost risk:** an increase in operating costs will reduce the profitability and free cash generation of the project.
- **Management and labour risk:** an experienced and skilled management team is essential to the successful development and operation of mining projects.

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