



**Breakaway
Research**

September 2020

PRICE 53 cents
PRICE TARGET 92 cents

Dr Steve Bartrop | Research Manager

www.breakawayresearch.com

Company Information

ASX Code	MIO
Share Price (7 Sept 2020)	0.53
Ord Shares	113.1 m
Options/warrants/RSU	79.1 m
Market Cap undiluted	79.1 m
Est. Cash (1 Sept 2020)	3.2 m
Cash from option/warrants exercise	16.0 m
Total Debt	0.0 m
Enterprise Value	59.9 m

Directors

Exec Chairman	Cameron McCall
Director & CEO	Joe Phillips
Director (Non-Exec)	Alan Phillips
Director (Non-Exec)	Daniel Lanskey
Director (Non-Exec)	Andrew Suckling

Company Details

	Suite G03,
Address	555 Coronation Drive TOOWONG Qld 4066
Phone	+61 (0) 7 3221 1796
Web	www.macarthurminerals.com

Price Chart



Price to 7th September 2020

MACARTHUR MINERALS (ASX: MIO, TSX – V: MMS)

Next Milestone: Securing Route to Market

Recommendation: BUY

KEY POINTS

- Macarthur Minerals is an emerging iron ore producer as it advances its one billion tonne Lake Giles Iron Ore project located 175 km northwest of Kalgoorlie. When developed, this project will deliver many decades of high-quality magnetite concentrate production to a market which is increasingly demanding the higher quality and 'green' credentials of steel produced in Electric Arc Furnaces.
- The major development hurdle has been the ability to secure a route to market and this requires development of a 93 km road haul to a proposed rail siding on the Perth – Kalgoorlie rail line. The rail line continues to the Port of Esperance where it is proposed to load capsized ships for export. Historically the capacity on this line has been fully utilized by Cleveland-Cliffs from its Koolyanobbing mine but with declining reserves, production from this mine has fallen and mine was sold to Mineral Resources Limited (ASX: MIN) in 2018. This 'release' of rail line capacity along with proposed enhancements to rail haulage and unloading using Helix dumpers looks set to overcome the largest obstacle in the development of the Lake Giles project.
- The Company is moving forward with its Bankable Feasibility Study which is targeted for completion in the 2H CY 2021. High-level components are:
 - Resource upgrades – Completed
 - Route to market – applications submitted on haul road and rail siding, advanced discussions on rail paths (including unloading solutions), discussions advancing on port access and ship-loader capacity.
 - Mine design – commenced
 - Process flow sheet – final test work but low risk given extensive Davis Tube Recovery tests completed to-date
 - Plant design – commenced
 - Mine accommodation facilities, utilities, workshops, etc. design - commenced
- The project is strategically positioned near Mineral Resources' Koolyanobbing mine which has substantial infrastructure but limited reserves. Meanwhile the Lake Giles project risks are being significantly mitigated and this is likely to be reflected in an increasing share price. In our view high impact project risks are the finalization of the rail and port access (on track) and with the completion of the BFS next year, the project financing. We note that the share price of Champion Iron (ASX: CIA) increased significantly with these milestone announcements.

Macarthur Minerals is moving forward with its Lake Giles Iron Ore project with the potential to secure rail and port access stepping closer. Other components of its BFS have been completed (e.g. resource upgrade) or have commenced with BFS completion expected 2H CY2021. However, given the substantial project resource size (1 billion tonnes), the confirmation of access to market is likely to stimulate increasing interest in the Company.

Hence, Breakaway Research has a BUY recommendation on MACARTHUR MINERALS with a price target of A\$0.92/share reflecting our NPV valuation.

Disclaimer: This Report has been prepared by Stephen Bartrop who is an authorised representative of Breakaway Research Pty Ltd and issued by Breakaway Research Pty Ltd and the Breakaway Investment Group (AFSL 503622) and remains the property of Breakaway Research Pty Ltd (AFSL 503622). No material contained in this Research may be reproduced or distributed without prior written approval of Breakaway Research Pty Ltd, except as allowed by the Copyright Act. This Research is current at the date of publishing. For updates or further information regarding this research, please contact your advisor. Breakaway Research Pty Ltd (AFSL 503622) has been paid for this research. Investors should consider this report as only a single factor in making their investment decisions. Please refer to the disclosure section at the end of this document.

MACARTHUR MINERALS LIMITED							VALUATION (NPV)												
							FY20	FY21F	FY22F	FY23F	FY24F	FY25F							
Share Price A\$/share (post consolidation)						0.53							Op. Cash Flow Post Tax	68	98	390	500	1021	1010
Price Target A\$/sh						0.92							Cash on hand	0.32	0.33	64.57	195.39	66.46	159.13
Profit and Loss A\$M	FY20F	FY21F	FY22F	FY23F	FY24F	FY25F							Debt	0.00	0.00	0.00	309.00	288.40	269.18
Concentrate sales	0.00	0.00	0.00	0.00	299.50	381.19							Exploration	10.00	10.00	10.00	10.00	10.00	10.00
Other revenue	0.00	0.01	0.00	0.32	0.37	0.38							Valuation A\$M	68.75	98.79	454.72	386.55	799.48	900.42
Total Revenue	0.00	0.01	0.00	0.32	299.87	381.58							Valuation A\$/share	N/A	0.92	1.00	0.86	1.70	1.92
Operating costs													CASH FLOW YE 31 MAR	FY20F	FY21F	FY22F	FY23F	FY24F	FY25F
Mining & Beneficiation	0.00	0.00	0.00	0.00	70.39	84.12							EBITDA	55.82	0.01	-1.00	-0.68	109.49	152.05
Transport & Shipping	0.00	0.00	0.00	0.00	108.70	132.33							less						
General and Administrative	2.31	0.00	1.00	1.00	11.30	13.08							Change in working capi	0.12	0.00	0.12	0.00	-13.58	-5.25
Royalties	0.00	0.00	0.00	0.00	0.00	0.00							Interest paid	0.01	0.00	0.00	18.54	35.84	31.22
Total Costs	2.31	0.00	1.00	1.00	190.38	229.53							Tax paid	0.00	0.00	0.00	0.00	0.00	5.59
EBITDA	55.82	0.01	-1.00	-0.68	109.49	157.48							Cash Flow from Operat	-1.88	0.01	-1.12	-19.22	87.22	88.27
D & A	0.03	4.26	4.31	11.73	33.91	30.59							Capex	-0.87	-5.00	-115.64	-344.37	-10.15	-6.35
EBIT	55.79	-4.25	-5.30	-12.41	75.58	126.89							Closure costs	0.00	0.00	0.00	0.00	0.00	0.00
Interest	0.00	0.00	0.00	18.54	35.84	31.22							Rehabilitation bond	0.00	0.00	0.00	0.00	0.00	0.00
Profit before tax	51.12	-4.25	-5.30	-30.95	39.74	95.66							Total Capex	-0.87	-5.00	-115.64	-344.37	-10.15	-6.35
Tax Benefit	0.00	0.00	0.00	0.00	0.00	-38.57							Net Cash from Operatic	-2.75	-4.99	-116.76	-363.58	77.07	111.90
Profit after tax	51.12	-4.25	-5.30	-30.95	39.74	57.10							Debt drawdown	0.00	0.00	0.00	309.00	0.00	0.00
Shares on issue	113.1	118.9	463.6	463.6	475.3	475.3							Debt repayment	0.00	0.00	0.00	0.00	20.60	17.95
EPS (cents per share)	-0.2	-3.6	-1.1	-6.7	8.4	12.0							Equity raised	1.70	5.00	181.00	0.00	0.00	0.00
Gross Cashflow per share	-1.7	0.0	-0.2	-4.1	18.4	18.6							Dividends paid	0.00	0.00	0.00	0.00	0.00	0.00
Net Cashflow per share	-2.4	-4.2	-25.2	-78.4	16.2	17.2							Net Cash flow	-1.05	0.01	64.25	-54.58	56.47	92.67
PER	-276.3	0.0	-45.9	-7.9	6.3	4.4							Closing cash	0.32	0.33	64.57	9.99	66.46	159.13
P/CF (gross)	-31.6	0.0	-217.3	-12.7	2.9	2.8							Interest earned	0.01	0.00	0.32	0.37	0.38	1.13
P/CF (after capex)	-21.6	0.0	-2.1	-0.7	3.2	3.0							BALANCE SHEET YE 31 M	FY20F	FY21F	FY22F	FY23F	FY24F	FY25F
PRODUCTION DATA	FY20F	FY21F	FY22F	FY23F	FY24F	FY25F							Cash	0.32	0.33	64.57	9.99	66.46	159.13
Magnetite ROM Ore (t)	0.0	0.0	0.0	0.0	5.1	6.4							Other assets	0.11	0.11	0.11	0.11	0.11	0.11
Hematite ROM Ore (t)	0.0	0.0	0.0	0.0	0.9	0.9							Property, Plant & Equip	63.01	64.62	175.95	508.59	484.84	458.87
Total ROM Ore (t)	0.0	0.0	0.0	0.0	6.0	7.3							Total Assets	63.43	65.05	240.63	518.68	551.40	618.10
Strip Ratio	0.0	0.0	0.0	0.0	3.0	3.0							Accounts payable	0.36	0.36	0.36	0.36	0.36	0.36
Total Waste Mined (t)	0.0	0.0	0.0	0.0	18.0	21.8							Provisions	0.06	0.06	0.06	0.06	0.06	0.06
Magnetite Recovery	0%	0%	38%	38%	38%	38%							Warrant Liability	2.58	2.58	2.58	0.00	0.00	0.00
Magnetite Concentrate (t)	0.00	0.00	0.00	0.00	2.85	3.35							Debt	0.00	0.00	0.00	309.00	288.40	269.18
Fe (%)	0.0%	0.0%	0.0%	0.0%	65.0%	65.6%							Total Liabilities	3.01	3.01	3.01	309.43	288.83	269.60
SiO ₂ (%)	0.0%	0.0%	0.0%	0.0%	4.9%	5.0%							Net Assets	60.43	62.05	237.62	209.25	262.57	348.50
Al ₂ O ₃ (%)	0.0%	0.0%	0.0%	0.0%	1.3%	1.1%							Issued Capital	99.67	104.67	285.67	285.67	285.67	285.67
Sales (t)	0.00	0.00	0.00	0.00	2.62	3.35							Reserves	4.54	4.54	4.54	4.54	4.54	4.54
OPERATING COST DATA (A\$)	FY20F	FY21F	FY22F	FY23F	FY24F	FY25F							Retained Profits	-43.78	-48.03	-53.34	-84.28	-44.55	36.14
Mining	0.00	0.00	0.00	0.00	36.29	42.30							Adjustment	0.00	0.87	0.74	3.32	16.90	22.15
Crushing	0.00	0.00	0.00	0.00	5.05	5.65							Shareholders Funds	60.43	62.05	237.62	209.25	262.57	348.50
Processing	0.00	0.00	0.00	0.00	27.10	33.81							ASSUMPTIONS	FY20F	FY21F	FY22F	FY23F	FY24F	FY25F
Tailings & Filtration	0.00	0.00	0.00	0.00	1.95	2.36							AUD Inflation	2.4%	2.4%	2.4%	2.4%	2.4%	2.4%
Road, Rail & Port	0.00	0.00	0.00	0.00	63.88	74.96							AUD/USD	0.70	0.70	0.70	0.70	0.70	0.70
Marketing & Indirect Cos	0.00	0.00	0.00	0.00	10.30	12.08							Benchmark Iron Ore Prices (CFR China)						
Shipping	0.00	0.00	0.00	0.00	44.82	57.37							65% Fe Index - Base Pri	90.0	86.0	86.0	86.0	86.0	86.0
Corporate Overhead	0.00	0.00	1.00	1.00	1.00	1.00							65% Fe Index - Fe bon/l	1.4	1.3	1.3	1.3	1.3	1.3
Total Costs	0.00	0.00	1.00	1.00	190.38	229.53							65% Fe Index - Si bon/p	1.0	1.0	1.0	1.0	1.0	1.0



Company Overview & Investment Case

Listed on the ASX since late 2019. Already on the TSX-V

Macarthur Minerals Limited completed an IPO in late 2019 raising approximately \$5m for the issue of 20 million shares at 25 cents per share. ASX quotation of its securities commenced on December 6, 2019 (ASX: MIO).

The Company is also listed on the TSX – Venture Exchange in Canada (TSX-V: MMS) (OTCQB: MMSDF) and has both a North American and Australian shareholder base.

ASX listing reflects the location of the its principle asset....

The ASX listing is in line with the principal location of its assets in Western Australia including its flagship Lake Giles Iron Ore project located 175 km northwest of Kalgoorlie. The Company completed a Preliminary Economic Assessment on this project in 2019 which confirmed an attractive long-life project and recommended the Company embark on a Bankable Feasibility Study which is expected to lead to project development.

Several tasks to be completed for the BFS ...

Several tasks were required for the Bankable Feasibility Study and these include:

1. Resource drilling to upgrade a portion of the inferred resources to indicated and measured categories.
2. Secure access (haul road – rail siding -rail) to the Esperance port and work with the Port authority to secure rail unloading, storage and ship loading capability.
3. Mine design
4. Process flowsheet and plant design

Increases in Measured and Indicated resources....

The ASX IPO raising proceeds were partly used to finance the resource upgrade drilling which was completed in 2019 and led to the following upgrades:

- Measured resources: 53.9 Mt at 30.8% Fe head grade and 66.0% Fe DTR concentrate grade
- Indicated resources: 218.7 Mt at 27.5% Fe head grade and 66.1% Fe DTR concentrate grade
- Inferred resources: 997.0 Mt at 28.4% Fe head grade and 64.6% Fe DTR concentrate grade

The overall resource is substantial – 1 billion tonnes...

While the project clearly has resources in excess of 1 billion tonnes, the upgraded resources in the high confidence level in the Measured and Indicated categories now underpins the requirements for the bankable feasibility study. However, it is also worth reflecting on the overall size of the resource at in excess of 1 billion tonnes which underpins a ‘multi-generational’ project including expansion opportunities.

Koolyanobbing wind down has provided rail access to other users...

The next milestone is the securing access to the Port of Esperance and ship loading capacity. Breakaway Research notes that a key event in respect of securing this access has been the winding down of production at the Koolyanobbing iron ore mine and the sale of the mine by Cleveland-Cliffs Inc. to Mineral Resources Limited (ASX: MIN) in 2018. Essentially the winding down of iron ore production reflecting diminishing reserves at Koolyanobbing has meant that there is now rail capacity to transport iron ore from other mines in the area whereas historically production from Koolyanobbing had completely filled this rail capacity.

Over the last three months the Macarthur Minerals team has been lodging applications for the construction of a 93km haul road from the Moonshine deposit to a rail siding adjacent to the rail network. This rail network is owned by Arc Infrastructure and the Company has received a proposal from Arc Infrastructure to establish a Commercial Track Access Agreement for securing rail capacity from the Company’s Lake Giles Iron Project to the Port of Esperance.

RCR technologies are looking at the application of the

The Company has also engaged RCR Mining Technologies Pty Ltd to provide the preliminary engineering design to apply the Helix Dumper unloading system for the unloading of the magnetite concentrate at



*revolutionary
Helix dumper
system*

the Port of Esperance. This technology has been developed by Kiruna in Sweden and has very efficient discharge rates up to 2,500 tonnes per hour. Other key benefits include:

- Lightweight wagons, increasing gross payload;
- High-capacity continuous discharge, reducing operating costs;
- The potential for lower capital cost;
- The potential for lower operating cost with unloading powered only by the locomotive’s forward motion; and
- Wagon body shape optimised for wet concentrates.

The application of this technology at the Port of Esperance will be a first in Australia and revolutionise the unloading speed and capacity at the port. Macarthur has been working with the Southern Ports Authority on developing this system at the Port of Esperance, and which could also benefit other exporters. In addition, Macarthur is seeking to develop a storage shed for its magnetite concentrate prior to ship loading and which would also be located at the port. The storage shed capacity is being designed to be well in excess of the Company’s immediate requirements for the Stage 1 Lake Giles Iron Project.

*The BFS is well on
track for
completion in 2H
CY 2021...*

In summary, Macarthur is attaining major milestones on its Mt Giles iron ore project and completion of the bankable feasibility study is planned over the next 12 months with the outstanding items being relatively low risk e.g. plant and mine design. Even the metallurgical testwork is relatively low risk given that the Company has conducted over 4,500 Davis Tube Recovery tests on drill core and hence there is unlikely to be any surprises on recoveries or product grades from further testwork.

Project Value and Peer Comparison

Breakaway Research’s initiation report dated October 2019 reviewed the Company and its projects leading to its IPO in late 2019. However, the completion of the ASX listing now provides a firm capital structure and the financial modelling has been updated to reflect this status as well as recent developments.

*We have an NPV
valuation of 92
cents per share*

Our NPV valuation is currently 92 cents per share and represent an attractive premium over the current share price. As Company achieves production the share price is expected to move above \$2.00 per share.

VALUATION (NPV)	FY20	FY21F	FY22F	FY23F	FY24F	FY25F
Op. Cash Flow Post Tax	69	80	391	501	1022	1011
Cash on hand	0.32	5.33	69.60	200.47	71.58	164.31
Debt	0.00	0.00	0.00	309.00	288.40	269.18
Exploration	15.00	15.00	15.00	15.00	15.00	15.00
Valuation A\$M	69.10	85.80	460.43	392.31	805.35	906.34
Valuation A\$/share	N/A	0.92	1.08	0.93	1.82	2.04

FIGURE 1. NPV VALUATION SERIES. SOURCE BREAKAWAY RESEARCH.

*Macarthur is not
expensive...*

A comparison with other listed iron ore companies on the ASX highlights that Macarthur is not expensive relative to its peers, particularly when there is consideration of the size of the one billion tonne resource base (see Figure 2). An example is that emerging producer Fenex has a market capitalisation \$52m which is slightly below Macarthur’s \$59.9m adjusted market capitalisation but Fenex’s resource base is only 10.5 million tonnes and while it can move to a small production rate with relatively low capex, there is limited future production scale and it is really capturing the current strong iron ore prices rather than creating a long term sustainable and scalable project.



ASX listed iron ore companies....

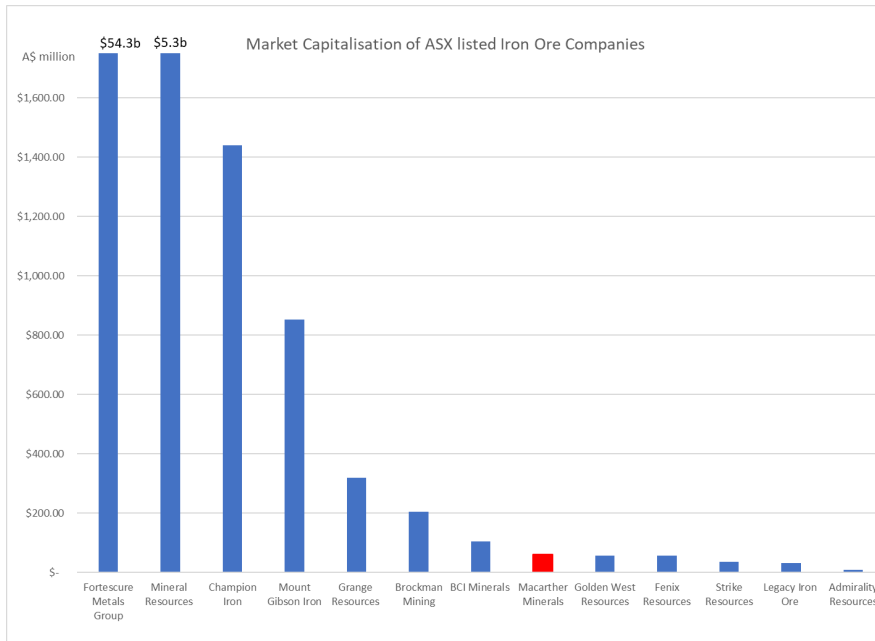


FIGURE 2. MARKET CAPITALISATION OF ASX LISTED IRON ORE COMPANIES. SOURCE; BREAKAWAY RESEARCH.

Champion Iron analogy

In assessing the potential Macarthur Minerals share price trajectory as it moves to complete its BFS in 2H CY2021, secure financing and develop the Lake Giles project, a useful comparison can be made with Champion Iron. Champion Iron is now a \$1.4 billion company but when it first purchased the Lake Bloom iron ore project in Quebec it took some time for the market to assign significant value to the project until key events such as the securing rail and port access and confirmation of the restart of the project (see Figure 3).



FIGURE 3. CHAMPION IRON SHARE PRICE AS IT MOVED TO PRODUCER STATUS. SOURCE: CHAMPION IRON.

Access to rail and port was seen as a significant de-risking event....

The Lake Bloom Project was developed and hence the timeframe to production has been relatively quick. However, it does highlight key de-risking events which are recognised by the market including the securing of rail and port access.

The Lake Giles Iron Ore Project comprises the tenements which include the Ularring and Moonshine deposits ...

Lake Giles Project Recap

The Lake Giles Iron Ore Project is located approximately 175 km northwest of Kalgoorlie and encompasses 62 km² of mining tenements covering the Yerilgee greenstone belt in the Yilgarn Region. The Company and others have spent more than \$80m in advancing the Lake Giles project towards development since 2006.

Key attributes on its location are the 90 km distance to the Perth – Kalgoorlie railway line which also connects to the Port of Esperance, as well as its location relative to Mineral Resources' (ASX: MIN) Koolyanobbing iron ore mine and other Mineral Resources' projects (See Figure 4).

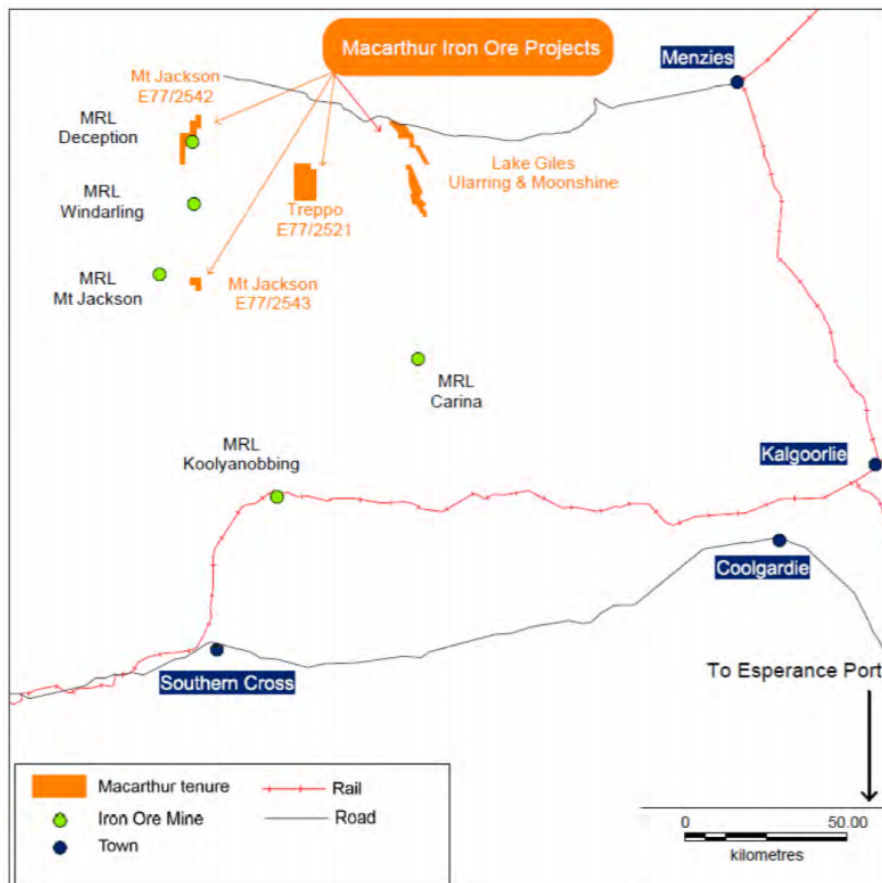


FIGURE 4. LOCATION OF MACARTHUR MINERALS' PROJECT AREAS WITHIN THE OVERALL LAKE GILES IRON ORE PROJECT. SOURCE: COMPANY.

The Moonshine magnetite project will be the dominant source of ore for the project....

The Lake Giles Iron Ore Project includes two regions with different development proposals which are outlined below:

1. The Moonshine Magnetite Project: This comprises magnetite resources including the Moonshine and Moonshine North deposits. The proposed project development would involve mining and beneficiating the magnetite ore to produce a high grade (+65% Fe) concentrate for export sales;
2. The Ularring Hematite Project: This comprises hematite mineralisation in the Snark/Drabble Downs, Central and Banjo/Lost World deposits. The proposed project development would lead to the production and sales of direct shipping ore (DSO lump and fines) with also options to beneficiate the ore.

The Company is focusing on the Moonshine Magnetite Project which delivers higher investment returns as within the iron ore market, steel producers are now actively seeking higher purity magnetite concentrate for processing in comparison to the less pure hematitic ores. The Company also is not interested in competing with the large-scale Pilbara hematitic iron ore producers such as Rio Tinto BHP and Fortescue.

Recent work has involved drilling to upgrade the resource classifications as part of the BFS...

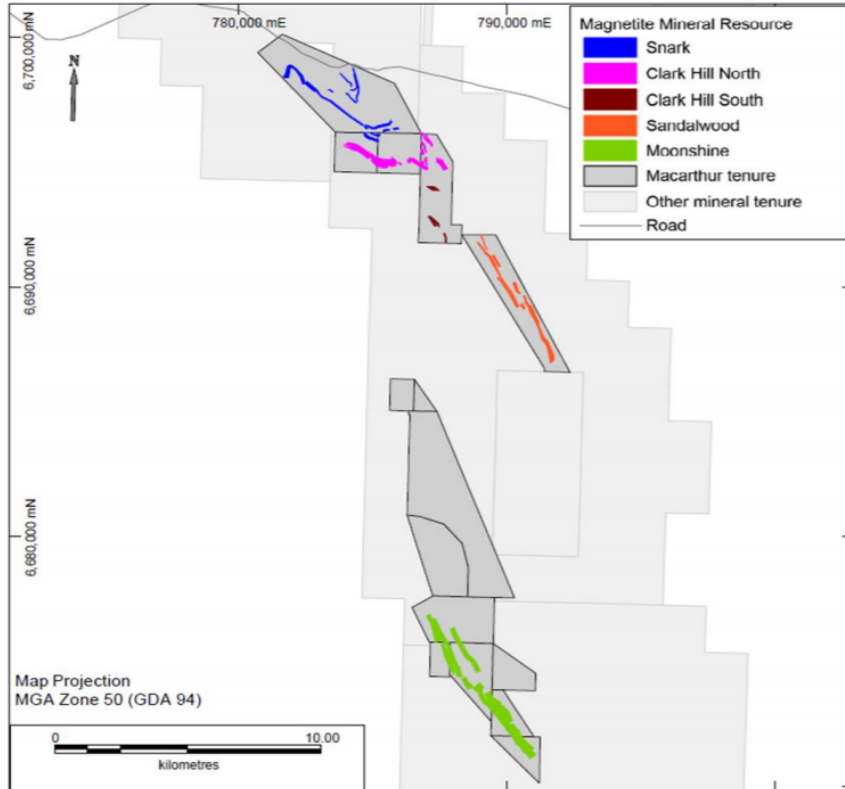


FIGURE 5. LOCATION OF THE MOONSHINE (MOONSHINE AND MOONSHINE) MAGNETITE DEPOSITS AND ULARRING (SNARK/DRABBLE DOWNS, CENTRAL AND BANJO/LOST WORLD) HEMATITE DEPOSITS. SOURCE: COMPANY.

More than 250 Mt are now in the combined Measured and Indicated resource categories...

In late 2019 and as part of its Bankable Feasibility Study the Company completed 30-hole drilling programme to upgrade the resource categories within the existing 1 billion tonne inferred resource base. The drilling focused on the Moonshine deposits on 200 m by 200 m drill spacing. This deposit hosts high grade magnetite resources and can easily supply the targeted the 2.5 – 3.4 Mt pa Stage 1 production rate.

The updated Mineral Resources are reported in Figure 6 which have a Davis Tube Recovery (“DTR”) mass recovery of greater than 15%.

Magnetite Resources Category	Million Tonnes	Head Grades					Concentrate Grade					
		Fe (%)	P (%)	SiO ₂ (%)	Al ₂ O ₃ (%)	LOI (%)	DTR (%)	Fe (%)	P (%)	SiO ₂ (%)	Al ₂ O ₃ (%)	LOI (%)
Measured	53.9	30.8	0.05	45.4	1.6	2.7	32.2	66.0	0.031	6.2	0.2	-0.7
Indicated	218.7	27.5	0.046	51.1	1.4	1.6	31	66.1	0.017	6.7	0.1	-0.1
Measured & Indicated	272.5	28.1	0.047	50.0	1.4	1.8	31.2	66.1	0.02	6.6	0.2	-0.2
Inferred	449.1	27.1	0.047	52.6	1.0	1.4	29.2	65.0	0.026	8.4	0.1	0

FIGURE 6. UPDATED MEASURED, INDICATED AND INFERRED RESOURCES IN THE MOONSHINE DEPOSITS. SOURCE: COMPANY.

The Company has also reported the previous resource estimates for the Snark, Clark Hill North, Clark Hill South and Sandalwood deposits in accordance with current CIM Definition Standards (See Figure 7).

Magnetite Resources Deposit	Million Tonnes	Head Grades				Concentrate Grade					
		Fe (%)	SiO ₂ (%)	Al ₂ O ₃ (%)	LOI (%)	DTR (%)	Fe (%)	P (%)	SiO ₂ (%)	Al ₂ O ₃ (%)	LOI (%)
Sandalwood	334	31.1	48.4	1.5	-0.6	33.1	64.7	0.03	9.5	0.06	-2.7
Snark	69	27.8	49.8	1.6	2.4	23.4	66.2	0.03	7.5	0.13	-2.8
Clark Hill North	130	25.8	42.6	1.7	0.14	33.2	62.4	0.04	12.1	0.16	-2.6
Clark Hill South	15	32.3	47.0	0.6	0.02	31	63.8	0.02	9.8	0.14	0

FIGURE 7. INFERRED RESOURCES AT THE SANDALWOOD, SNARK, CLARK HILL NORTH AND CLARK HILL SOUTH DEPOSITS.



Mineral Resources estimates have been updated by CSA Global having previously provided technical support on Macarthur's N143-101 Technical Report, 20121 as well as meeting the JORC 2012 Code requirements.

The initial concentrate production will focus on mining higher grade portions of the Moonshine North and South deposits (including a 800 m zone grading +58% Fe). While it is likely that beneficiation will produce a high grade (+68% Fe) concentrate the Company recognises that there is no commercial benefit in achieving a concentrate grade exceeding 65% Fe and hence the Company's strategy is to blend lower grade hematite ore to decrease the Fe content to average 65% Fe but with an overall higher sales tonnage.

The separate Treppo Grande project also has great mineralisation with potential for early exploitation....

Treppo Grande Project

In early 2018, the Company made an application for 68 km² with Exploration Licence E77/2521 to cover the Treppo Grande Iron Ore Project. The Treppo Grande Project is located approximately 32 km west of the Lake Giles Projects (see Figure 4). The project is also 35km east of Mineral Resource Ltd's (MRL) Koolyanobbing Iron Ore Operations and is closer to established rail infrastructure to the Port of Esperance than the Lake Giles Iron Ore Project.

This area has been held by a private exploration company wholly owned by renowned Kalgoorlie Prospector Mel Dalla-Costa for the past eight years under an Exploration License (EL77/1208). During this time, approval was granted for an exploration program of diamond drilling and geophysical mapping. The Treppo Grande Project has already been subject to flora and fauna baseline surveys indicating that the conservation values of Mt Manning are a lower priority than surrounding BIF ridges. In addition, an ethnographical cultural heritage survey by the Traditional Owners has cleared the area of sites of significance.

The Treppo Grande Project was explored in recent years for high grade hematite iron ore mineralisation and which identified three potentially economic styles of Direct Shipping Ore ("DSO") mineralisation. These were massive dense hematitic ironstones, specular hematite and oxidised 'Indurated Detrital Ironstone'.

Historic drilling has demonstrated the prospectivity of the project, particularly the J-Hook prospect. Two diamond holes testing the J-Hook prospect reported:

- 17.5m @ 65.49% Fe from 2.5m from hole MMS002, and
- 40.4m @ 55.77% Fe from 3.6 m from hole MMS001.

The J-Hook prospect contains occurrences of massive, fissile and specular hematite. Breakaway Research expects the Company to focus on this project on its potential to generate an early cash flow although the main focus remains on the Lake Giles Iron Ore Project.

Progressing the 'route to market'

.....

Applications for haul road and rail siding have been lodged

Infrastructure and Logistics – Moving forward!

As outlined previously Macarthur's proposed route to market involves:

1. Development of a haul road from the Lake Giles Iron Project to the Perth – Kalgoorlie railway.
2. Establish a new rail siding for loading at this location (Jaurdi)
3. Negotiated storage and loading capacity at the Port of Esperance

The Company is actively progressing these three components

1. On the 25th June 2020 Macarthur Minerals announced it had lodged applications with the Department of Mines, Industry, Regulation and Safety to develop a 93 km haul road from the Lake Giles Iron Ore Project to a proposed rail siding adjacent to the Perth – Kalgoorlie railway line (see Figure 8). The Company is now completing environmental surveys of the road alignment to progress the environmental permitting.

2. On the 15th July 2020 Macarthur Minerals announced that it received an agreed pathway from Arc Infrastructure to develop a Commercial Track Access Agreement for the Company to secure rail capacity from its proposed Jaurdi siding to the Port of Esperance.
3. Recently on the 2nd September 2020 Macarthur Minerals announced that it had secured the services of RCR Mining Technologies which can provide the conceptual engineering and design solution for the Helix Dumper for unloading iron from its Lake Giles Project at the port.

The latter involves negotiation with the Southern Ports Authority as well Arc Infrastructure and particularly following the completion of the conceptual design. However, the Helix Dumper is an effective system which can expand the capacity of the port and which would be in the interest of many stakeholders. The is exemplified with the design capacity that has the potential to be up to 25,000 tonnes per hour.

A 93 km haul road will be established to the Jaurdi siding...

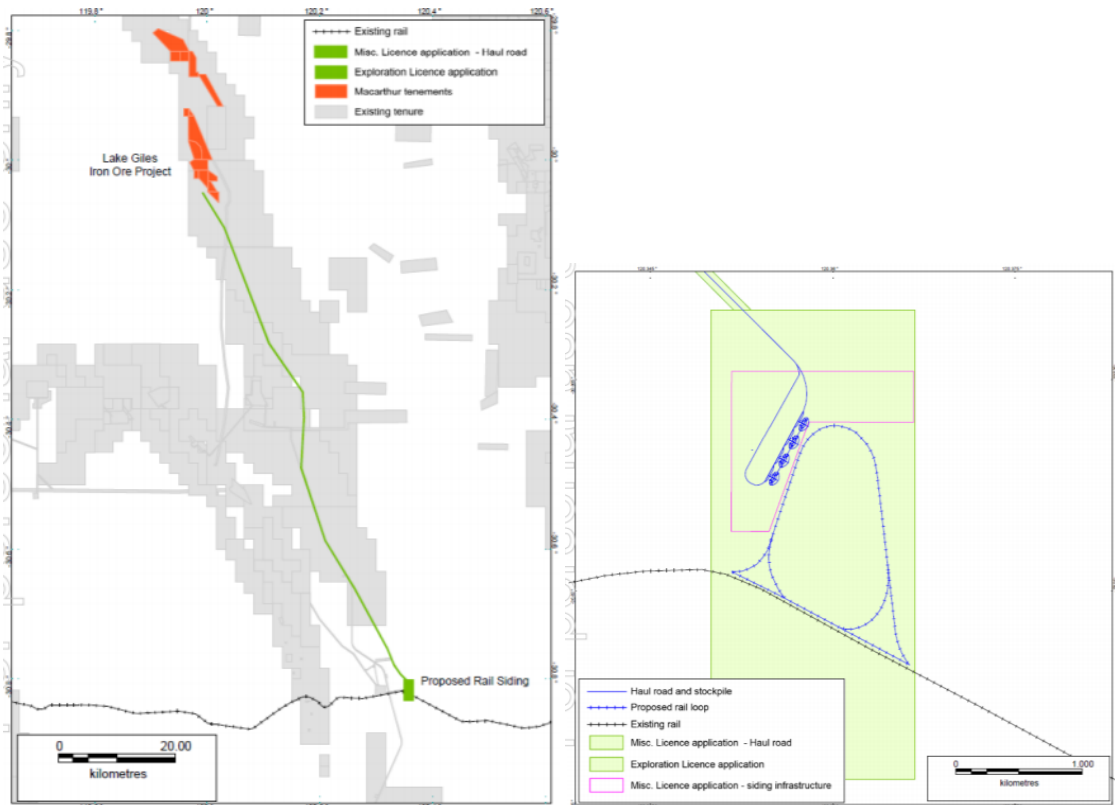


FIGURE 8. HAUL ROAD ROUTE AND JAURDI RAIL SIDING DESIGN. SOURCE COMPANY.

The Helix dumper is a revolutionary system for unloading rail wagons....



FIGURE 9. HELIX DUMPER SYSTEM AND PORT LAYOUT. SOURCE: COMPANY.



With the size of the project this represents a low level of required capital in comparison to many other iron ore projects where the logistics and costs of transporting iron ore products to markets is often a major constraint in project development.

The project is on 15 granted mining leases....

Permitting and Approvals

The Lake Giles Iron Ore project consists of 15 Mining Leases covering a total area of 62 km² and which are held by Macarthur Iron Ore Pty Ltd, a 100% subsidiary of the Company.

In reference to the project, independent consultant, CSA Global¹ noted that the tenements had none of the following encumbrances:

- Environmental liabilities from previous mining or current exploration activities
- Heritage agreements – there are no heritage agreements in place as there are no registered native title claimants
- Risk affecting access, title or right to perform work on the tenement.

¹ CSA Global 2012 NI43-101 Technical Report for Macarthur Minerals Limited Pre-Feasibility Study Ularring Hematite Project Western Australia. Sedar Published Report dated 27th September 2012.

Open pit mining with low (3:1) strip ratio....

Mining

Open pit mining will focus on exploiting the Moonshine lodes which have significant thicknesses e.g. Western lode: 60 - 120m thick, Eastern lode – 30 – 100m thick. Forecast ore production is approximately 7 Mtpa and is required to meet the +2.5 Mtpa concentrate production target. Average strip ratios are less than 3 to 1.

Processing involves crushing, grinding and magnetic separation...

Processing

Plant design is to crush and grind the magnetite ore and hematite fines to 32mm. The magnetite ore is then passed through a rougher magnetic circuit to remove non-magnetic material (see Figure 10).

The remaining concentrate is then ground to P80 45 microns in a combination SAG and ball mill and is then passed through a double drum wet LIMS (low intensity magnetic separators). The magnetic concentrate is further ground with tertiary milling using a Vertimill and the concentrate is then passed through a triple drum wet LIMS.

The final magnetite concentrate is then dewatered and is ready for transport to markets.

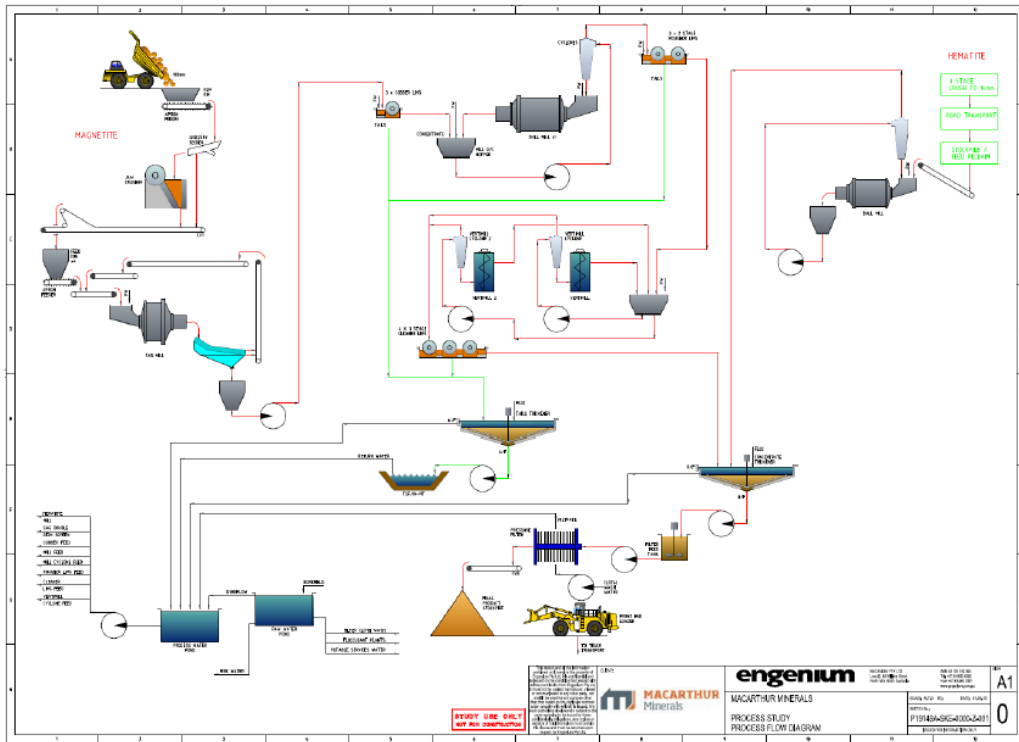


FIGURE 10. THE PROPOSED FLOWSHEET FOR PRODUCTION OF A +65% FE MAGNETITE CONCENTRATE. SOURCE: COMPANY.

Strong metallurgical performance in comparison to other magnetite projects....

A summary of the preliminary metallurgical testwork is presented in Figure 11.

Metallurgical Testwork based on 2 drillholes	High Grade	Very High Grade
Head Grade	33.0% Fe	43.4% Fe
Davis Tube Recovery Concentrate	68.5% Fe	69.1% Fe
Residual SiO ₂	4.30%	3.30%
DR Mass Recovery to Concentrate	45.0% Fe	51% Fe
Low Intensity Magnetite Separation Grind Sizing (80% passing)	45 um	45 um
Bond weight index kwh/t	16.2	N/A

FIGURE 11. PRELIMINARY METALLURGICAL TESTWORK ON SAMPLES FROM TWO DRILLHOLES. SOURCE: COMPANY.

Indeed, in terms of the holy trilogy of magnetite processing, Moonshine magnetite has superior outcomes than most other deposits:

- **Mass Pull** – Most magnetite ores have a 30% factor whereas Lake Giles magnetite ore has a mass pull factor in the 45% to 50% range.
- **Grinding** – Lake Giles magnetite ore requires grinding to deliver a P80 at 45um whereas most Pilbara ores need to be ground to 26um to reduce the silica content
- **Ore hardness** – Lake Giles magnetite ore has a 16.2 bond work index versus many of the Pilbara ores with an index around 24

Bankable Feasibility Study to be completed early in 2H 2021....

Timeline to Production

Macarthur is focused on completing its Bankable Feasibility Study in around 12 months i.e. 2H CY2021. The recent drilling programme has been a key component of this study as well as securing a route to market discussed earlier.

Other key components of the bankable feasibility study:

- Mine design
- Refining the process flow sheet



Two year construction timeframe....

- Plant design
- Power generation and water sourcing
- Other miscellaneous design including accommodation, facilities, care & maintenance workshops, etc.

Construction is expected to take between 18 months to 2 years and we have assumed first production in early 2024.

Marketing and Finance

Potential Glencore involvement in project financing....

The Company has signed a 10-year Iron Ore Off Take Agreement for the Lake Giles Iron Project with Glencore International A.G. The off-take agreement averages around 4 million tonnes per annum over the first 10 years and incorporates an option to extend the agreement for a further 10-year period including any additional production from the project.

Glencore will provide marketing services on an FOB basis and will assist in smoothing revenue with a capacity to store concentrate rather than sell into weak markets. This has been effective with the Glencore backed Champion Iron project in Quebec, Canada.

Glencore is supportive of the project. Project financing is likely to involve 65% debt, 35% equity, creating opportunities for other partners to invest and the Glencore agreement allows for a 'claw back' of the offtake to assist in project financing if required.

Iron Ore Prices

Magnetite concentrate is becoming highly sought after by steel mills...

The iron ore market has changed over recent years where high-grade products including magnetite concentrate, is attracting premium pricing.

Magnetite concentrates have low impurity levels and produce steels with more malleable characteristics than hematitic steels. This steel is better for pressed metal as in used in car bodies, white goods, etc. and reflects a trend away from more traditional construction steels in the future.

China steel production is also focusing on electric arc furnaces from a reduced pollution perspective and which requires a supply of quality magnetite concentrates.

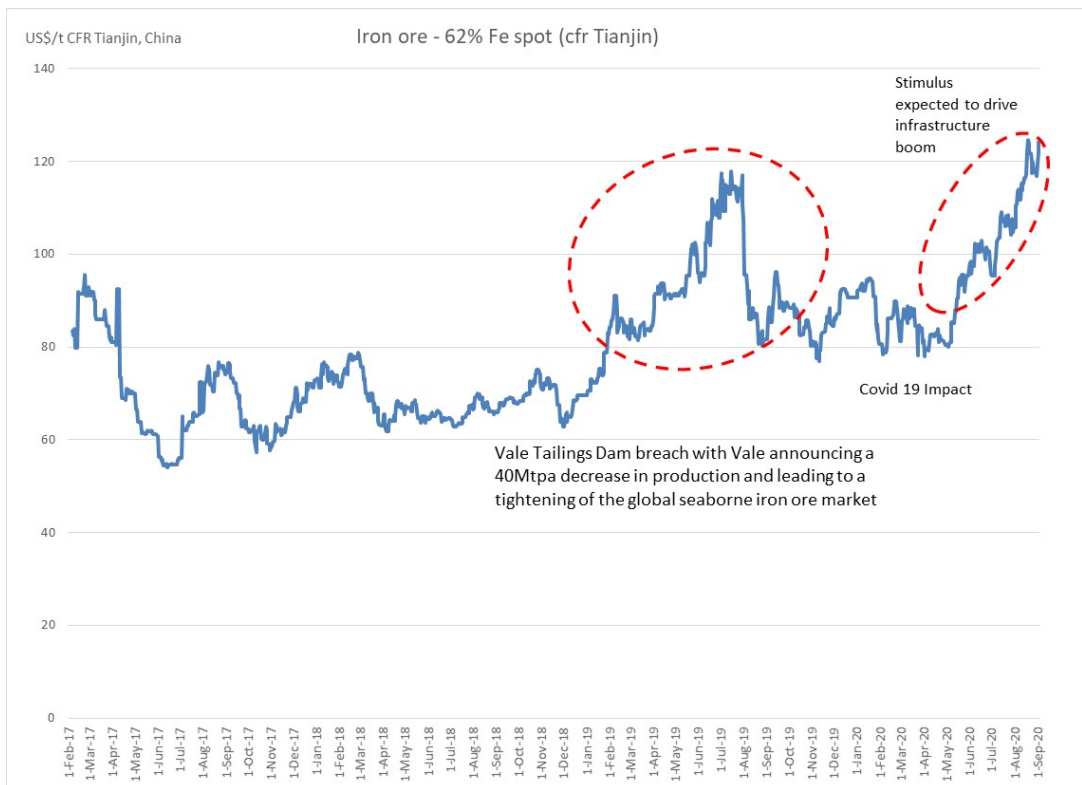




FIGURE 12. IRON ORE PRICES CFR TANJIN, CHINA. SOURCE: BREAKAWAY RESEARCH

Prices moved high with Vale dam burst....

Iron ore prices have been volatile over the past two years rising first in 1H CY2019 and then more recently following the Covid 19 pandemic. The increase in early 2019 stemmed from the announcement in January 2019 when Vale announced a deadly breach of a tailings dam which killed many civilians and led to an announcement by Vale that it was reducing production by 40 Mtpa. This stemmed from the decommissioning of several tailings dams which also posed a future threat.

Then with the stimulus following the Covid 19 pandemic....

The iron price fell heavily during the 2H 2019 reflecting a faster than expected recovery in supply but more importantly, increasing investor concern about economic growth in China, with industrial output at its weakest since 2002. Iron ore stockpiles increased at Chinese ports and the US – China trade war continued to undermine confidence.

In the 1H CY2020 iron ore prices softened with the worldwide Covid-19 pandemic but more recently it has climbed firstly on the back an expected adverse impact on Brazilian iron ore production (again Vale) from high Covid 19 infection rates at the mine sites, and secondly, from the enormous size of the stimulus that China and the rest of the world have been directing at infrastructure projects to assist in the economic recovery following the pandemic. SP Angel report (dated 23 July 2020) that US\$17 trillion is the stimulus tally from governments across the world. An example of this stimulus is in Shenzhen where the city has started 155 new construction projects in Q1, including a third runway for Shenzhen Airport at a cost of US\$1.76b. Shenzhen now has 163 construction projects in June with total planned investment of US\$19.3b.

Our financial modelling continues to assume forecast iron ore prices at US\$86/t CFR (65% Fe) as a base price and which reflects a medium term a recovery in world economic growth with economic stimulus measures being steadily reduced.

Assumed 60 cent share price....

Financial Forecasts and Assumptions

Breakaway Research has modelled the forecast earnings and cash flows based on the 2019 Preliminary Economic Assessment completed by the Company along with inhouse adjustments and recent findings.

First production in early CY2024...

Breakaway modelling is based on the financial year ending 31 March in line with Macarthur’s financial year end and has assumed:

65% debt financing....

- Share price is A\$0.0.60
- BFS will be completed 2H 2021
- Project construction will take 24 months
- First production and subsequent ramp up commences in FY 2024
- The project is financed by debt (65%) and 35% equity with the equity priced at no premium to the current share price despite the de-risking of the project to that time
- Iron ore base price is US\$86/t CFR China (real)
- Exploration assets are nominally valued at A\$15m

Strong earnings profile with production....Net cash from operations is robust at >\$80m pa....

Figure 13 outlines the production assumptions with steady state production despite the opportunities for expansions during this period.



PRODUCTION DATA	FY20F	FY21F	FY22F	FY23F	FY24F	FY25	FY26	FY27	FY28	FY29
Magnetite ROM Ore (t)	0.0	0.0	0.0	0.0	5.1	6.4	6.4	6.4	6.4	6.4
Hematite ROM Ore (t)	0.0	0.0	0.0	0.0	0.9	0.9	0.9	0.9	0.9	0.9
Total ROM Ore (t)	0.0	0.0	0.0	0.0	6.0	7.3	7.3	7.3	7.3	7.3
Strip Ratio	0.0	0.0	0.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0
Total Waste Mined (t)	0.0	0.0	0.0	0.0	18.0	21.8	21.8	21.8	21.8	21.8
Magnetite Recovery	0%	0%	38%	38%	38%	38%	38%	38%	38%	38%
Magnetite Concentrate (t)	0.00	0.00	0.00	0.00	2.85	3.35	3.35	3.35	3.35	3.35
Fe (%)	0.0%	0.0%	0.0%	0.0%	65.0%	65.6%	65.6%	65.6%	65.6%	65.6%
SiO ₂ (%)	0.0%	0.0%	0.0%	0.0%	4.9%	5.0%	5.0%	5.0%	5.0%	5.0%
Al ₂ O ₃ (%)	0.0%	0.0%	0.0%	0.0%	1.3%	1.1%	1.1%	1.1%	1.1%	1.1%
Sales (t)	0.00	0.00	0.00	0.00	2.62	3.31	3.35	3.35	3.35	3.35

FIGURE 13. PRODUCTION ASSUMPTIONS. SOURCE: BREAKAWAY RESEARCH

Recent Iron Ore Transactions in the Region

Transactions have occurred in the region with Mineral Resources jockeying for position

The Koolyanobbing iron ore project was acquired by Mineral Resources in June 2018 when its previous owner, Cliffs Natural Resources, withdrew from Australia. The mine re-started the operation and shipped its first tonnes from the site in December 2018 and is forecast to produce 6 Mtpa for approximately 6 years with depletion expected in 2025.

The acquisition price is considered nominal as the operation was recently loss making under Cliffs Natural Resources and retained a residual significant environmental remediation burden. The sale was partly facilitated by the Western Australian Government to retain employment allowed royalty relief as well as reduced port charges.

The low resource base and limited mine life appears to have prompted Mineral Resources to purchase the Parker Range Iron Ore project owned by Cazaly Resources. This project incorporates the Mount Caudan Iron Ore Deposit which comprises goethite-hematite low phosphorous ore in a total resource of 35.1Mt @ 55.9% Fe (61.4% CaFe) and a low strip ratio (2.3:1). Cazaly had secured approvals for a two-stage project ramping up from 2 Mtpa to 4 Mtpa and exporting iron ore by road, rail and through the Port of Esperance.

Mineral Resources trumped an earlier offer by the Gold Valley Group to purchase the project from Cazaly with the following terms

- Cash consideration of \$20m (ex GST)
- Royalty of \$0.50/ tonne of iron ore produced from the tenements after the first 10 million tonnes of production

On the 30 August 2019, Cazaly announced that it had finalised the transaction and had received the \$20 million cash consideration from Mineral Resources.

Koolyanobbing has limited ore resources.....

The sale of the project to Mineral Resources potentially highlights the value of these projects and particularly where a company like Mineral Resources has available infrastructure but limited resources. Overall it bodes well for potential consolidation in the Yilgarn region and this will help underpin the value of Macarthur Mineral's Lake Giles Iron Ore project.

Further north in the Pilbara, this strategy of manoeuvring to secure strategic assets has also been evident with the recent sale by BCI Minerals of its Kumina iron ore project to also Mineral Resources. This project was sold for approximately \$35m and is close to Mineral Resources' other operations providing significant synergies in logistics and its workforce. BCI Minerals completed a six-month exploration program which resulted in a maiden JORC mineral resource of 115 million tonnes at 58% Fe.

Macarthur's Other Projects

The Company also has several early stage exploration projects covering a variety of commodities and which include:



- Gold and lithium (hardrock) projects located in the Pilbara WA.
- Hematite blending material
- The Reynolds Springs lithium brine project located in Nevada, USA
- Nickel and cobalt prospects on parts of the Lake Giles Iron Ore Project tenements, WA

Strategic value in location.....

As the Company is clearly focused on bringing the Lake Giles Iron Ore Project into production, it has investigated options for advancing these other projects to realise shareholder value without incurring expenditure or significant management time.

This includes a joint venture with Fe Limited on the Pilbara projects after conducting geophysics and geochemical surveys to identify targets. Overall, Fe Limited has reported encouraging early stage exploration results from the Hillside and Strelley project areas. Earlier in October 2019 Fe Limited announced it discovered a 14 km long gossanous zone with anomalous copper and precious metals at the Hillside project along with a sub parallel manganese-rich zone.

Recently Macarthur announced on 21 August 2020 that Fe Limited had entered into a binding Heads of Agreement to earn a 50% interest in the Yarram Iron Ore Project in the Northern Territory from Gold Valley Iron and Manganese Pty Ltd which owns the iron ore rights over the Yarram area. The consideration is A\$1.5m in cash and shares with a further A\$1.5m in cash and shares payable on achieving a JORC indicated resource milestone. FEL is to cover costs and will operate the Joint Venture with a casting vote on key issues, with the approval of other matters not to be unreasonably withheld.

At the Reynolds Springs Lithium Project in Nevada the Company has recovered anomalous soil sampling recording up to 405 ppm Li and which has been confirmed by similar results by American Battery Metals Corporation which holds the neighbouring tenements.

Overall, we have assigned a nominal \$10m value to Macarthur’s exploration assets that are unrelated to its Lake Giles Iron Ore Project as they do have potential to yield new discoveries and would be valued around this level in a junior explorer.

Other project has value....

Capital Structure

There are approximately 104 million shares on issue with major events being the consolidation and the capital raising association with the ASX listing in 2019. (see Figure 18). The enterprise value is estimated at \$61.5 million after accounting for the conversion of options, warrants and restricted share units.

Enterprise value of A\$59.9m at a 53 cent share price...

Parameter		Value
Share price	A\$	0.53
Shares issued	m	113.1
Market capitalisation	A\$m	59.4
Options, Warrants & RSU	m	37.6
Market capitalisation (diluted)	A\$m	79.1
Less		
Cash at 30 June 2020	A\$m	3.2
Cash raised from Option/Warrant exercise	A\$m	16.0
Add		
Debt	A\$m	0.0
Enterprise value	A\$m	59.9

FIGURE 14. THE ENTERPRISE VALUE OF MACARTHUR MINERALS. SOURCE: BREAKAWAY RESEARCH

The Company has options, restricted share units (management incentive shares) and warrants on issue and which are all impacted by the proposed consolidation. These are outlined in Figures 19, 20 and 21.

Canadian \$\$
conversion at
CAD/USD = 0.766

AUD/USD = 0.729

Expiry	Number issued	Exercise Price (CAD\$)	Amount Raised (A\$)
19-Feb-21	1,025,000	0.220	236,869
3-Dec-21	555,000	0.200	116,597
24-Feb-22	1,500,000	0.200	315,126
17-Dec-22	500,000	0.313	156,250
31-Dec-20	500,000	0.160	80,000
31-Dec-22	500,000	0.340	170,000
31-Dec-22	500,000	0.360	180,000
31-Dec-22	500,000	0.380	190,000
31-Dec-22	500,000	0.160	84,034
31-Dec-22	500,000	0.240	126,050
31-Dec-22	500,000	0.320	168,067
Total	7,080,000	0.257	1,822,992

FIGURE 15. ISSUED OPTIONS. SOURCE: COMPANY

All the options and restricted share units have been included in the enterprise value calculation.

Expiry	Number issued	Vsting Price (C\$)	Amount Raised (C\$)
27-Nov-20	1,176,471	0.800	-
19-Feb-21	112,500	0.800	-
2-Sep-22	3,437,500	0.320	-
Total	4,726,471	0.000	-

FIGURE 16. RESTRICTED SHARE UNITS ON ISSUE. SOURCE: COMPANY.

All warrants have been included in the enterprise value calculation.

Expiry	Number issued	Exercise Price (CAD\$)	Amount Raised (\$A)
15-Dec-20	7,928,183	0.80	6,662,331
24-Sep-21	3,563,100	0.40	1,497,099
15-Dec-21	10,184,630	0.40	4,279,251
5-Aug-22	3,029,375	0.40	1,272,845
1-Oct-22	867,291	0.40	364,408
3-Nov-20	204,609	0.40	85,970
Total	25,777,188	0.577	14,161,904

FIGURE 17. WARRANTS ON ISSUE. SOURCE: COMPANY.

Board and Management

Strategy refined in
late 2017 and
continues....

The strategy of the Company was refined in late 2017 with the appointment of Joe Phillips as CEO and Cameron McCall as executive chairman. The Board comprised the following members.

Cameron McCall - Executive Chairman

Mr Cameron McCall has experience across the financial services and commercial property industries within Australia and internationally. He has been providing investment advice, equity capital raising and share trading for over 17 years to corporate entities and private clients at Hartley's Limited and Macquarie Bank Limited. Mr McCall has during his 40-year career built an extensive network of international and Australian based high net worth individuals and corporate entities.

Mr McCall is currently running a corporate advisory business providing advice on asset acquisition and capital raising to international and Australian based organisations.



**Strong
transactional
experience....**

Joe Phillips - CEO & Director

Mr Joe Phillips was previously the Company's CEO in 2015 and was responsible for the original funding and development of the Company's significant iron ore assets, having completed its 2012 Prefeasibility Study for the Ularring Hematite Project and obtaining environmental approvals.

Mr Phillips was educated at the University of Queensland he combines strong project management skills with a discipline in economics and a detailed understanding of the operation of public administrations and the elected governments in Australia.

Alan Phillips - Non-Executive Director

Mr Alan Phillips has been a senior executive, director and chairman of ASX, TSX-V, TSX and AIM listed companies over a period of 40 years. Mr Phillips has experience in a broad range of industries, but predominantly in the mining and exploration of copper, gold, ethanol and iron ore and technology sectors.

Daniel Lanskey - Non-Executive Director

Mr Lanskey holds a post graduate Business Degree from Griffith University in Entrepreneurship and Venture Development. He has over 15 years' experience in Senior Management in the Public Markets and has been a Director and/or Chairman of ASX, OTCQX and TSXV listed Companies. He has been involved in numerous start-up Companies across various Industries including Information Technology, Oil and Gas, Mining and Real Estate. Working with an extensive capital market network across the Asia Pacific Region and North America, Mr Lanskey has been involved in numerous successful capital raisings via Private Placements for Pre IPO-funds, Initial Public Offerings and Reverse Takeovers of existing Public Companies.

Andrew Suckling - Non-Executive Director

Mr Suckling has over 25 years' experience in the commodity industry. He began in 1994 as a trader on the LME for Metallgesellschaft (MG). In that role, Andrew established a trading presence in China for MG, setting up a representative office in Shanghai in 1997. He then became a partner, research analyst and trader with the multi-billion-dollar fund, Ospraie Management, LLC and predecessor fund, Tudor Investment Corporation.

He is the Executive Chairman at Cadence Minerals, an early investment strategy and development firm active in lithium and other technology minerals, as well as the founding principal and portfolio manager for Verulam, a discretionary commodity fund.

Andrew is a graduate of Brasenose College, Oxford University earning a BA (Hons) in Modern History in 1993 and an MA in Modern History in 2000.



Analyst Verification

I, **Stephen Bartrop**, as the Research Analyst, hereby certify that the views expressed in this research accurately reflect our personal views about the subject securities or issuers and no part of analyst compensation is directly or indirectly related to the inclusion of specific recommendations or views in this research.

Disclosure

Breakaway Research Pty Ltd (AFSL 503622) and its associates, or consultants may receive corporate advisory fees, consultancy fees and commissions on sale and purchase of the shares of **Macarthur Minerals Limited** and may hold direct and indirect shares in the company. It has also received a commission on the preparation of this research note.

We acknowledge that Senior Resource Analyst, **Stephen Bartrop**, holds no shares in **Macarthur Minerals Limited**.

Disclaimer

Any observations, conclusions, deductions, or estimates of figures that have been made by Breakaway Research in this report should not be relied upon for investment purposes and the reader should make his or her own investigations. This publication has been issued on the basis that it is only for the information and exclusive use of the particular person to whom it is provided. Any recommendations contained herein are based on a consideration of the securities alone. In preparing such general advice no account was taken of the investment objectives, financial situation and particular needs of a particular person. Before making an investment decision on the basis of this advice, investors and prospective investors need to consider, with or without the assistance of a securities adviser, whether the advice is appropriate in light of the particular investment needs, objectives and financial circumstances of the investor or the prospective investor. Although the information contained in this publication has been obtained from sources considered and believed to be both reliable and accurate, no responsibility is accepted for any opinion expressed or for any error or omission that may have occurred therein.

[Breakaway Research Pty Ltd](#)
AFSL 503622 ABN: 39 602 490 906,
T+61293928011
169 Blues Point Road
McMahons Point NSW 2060