

1 October 2020

Technical Report for Lake Giles Magnetite Mineral Resource

Announcement Highlights

- Macarthur Minerals files NI43-101 Technical Report for the magnetite Mineral Resource at its Lake Giles Iron Project
- Measured Mineral Resources totaling 53.9 Mt and Indicated Mineral Resources of 218.7 Mt
- Inferred Mineral Resource of 997.0 Mt
- Macarthur now has sufficient Mineral Resources in the appropriate categories to progress its Feasibility Study

Macarthur Minerals Limited (TSX-V: MMS) (ASX: MIO) (OTCQB: MMSDF) (the “Company” or “Macarthur”) is pleased to announce it has filed the technical report for the magnetite Mineral Resource update for its 100% owned Lake Giles Iron Project (“the Project”) in Western Australia.

The independent technical report, entitled “NI43-101 Technical Report, Magnetite Mineral Resource, Lake Giles Magnetite Project, Western Australia (“2020 Technical Report”) with an issue date of September 29, 2020 was prepared in accordance with the requirements of National Instrument 43-101 (“NI 43-101”). The 2020 Technical Report is filed under the Company’s profile on the System for Electronic Document Analysis and Retrieval (“SEDAR”) website at www.sedar.com (filing date: October 1, 2020) and on the Company’s website at www.macarthurminerals.com

The Technical Report was completed by independent geological consultants CSA Global Pty Ltd (CSA Global).

The previous Mineral Resource estimates presented to the market between 2009¹ and 2019² consisted entirely of Inferred resources, including 710 million tonnes (“Mt”) at the Moonshine deposits. During 2019 the Company completed a program of infill drilling across some of the Moonshine deposit to upgrade the Mineral Resource category to include Indicated and Measured resources. The Mineral Resource upgrade has delivered sufficient resources in the appropriate categories to underpin the current Lake Giles Iron Project Feasibility Study.

The updated Mineral Resource estimates incorporate the recent drill assays and has resulted in an increase in the size of the Moonshine mineral resources, including resource category upgrades to now include Measured and Indicated resources. Approximately 30% of the Moonshine resource is now classified as Indicated with approximately 7.5% classified in the Measured category.

Premium Australian iron ore

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Highlights of Mineral Resource estimates:

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

Mineral Resource Update

The Lake Giles Mineral Resource estimates have been updated by CSA Global and reported in accordance with the JORC Code (2012 Edition).

The Mineral Resource estimate includes recent infill drilling conducted at the Moonshine deposits as previously disclosed on May 5, 2020 (see full release [here](#)).

Figures 1 and 2 show the distribution of the Mineral Resource categories within the domains hosting the Measured and Indicated Mineral Resources for the Moonshine deposits. Macarthur's infill drilling program concentrated on just a portion of the previously reported Mineral Resource² to establish Measured and Indicated Mineral Resources to underpin the Feasibility Study of the Lake Giles Iron Project. Further drilling beyond the Measured Mineral Resource will be conducted as required however, the Company is confident it has established sufficient Mineral Resources to support its Feasibility Study.

The Inferred Mineral Resources in Moonshine North (western domains) are extended to beyond 200m below the depth of drilling, with geological continuity at these depths implied based upon results from aeromagnetic surveys. The results from the aeromagnetic surveys covering Moonshine are less clear and there is therefore less confidence in the interpreted depth extension of the host Banded Iron Formation (BIF) unit where there is no drill hole support.

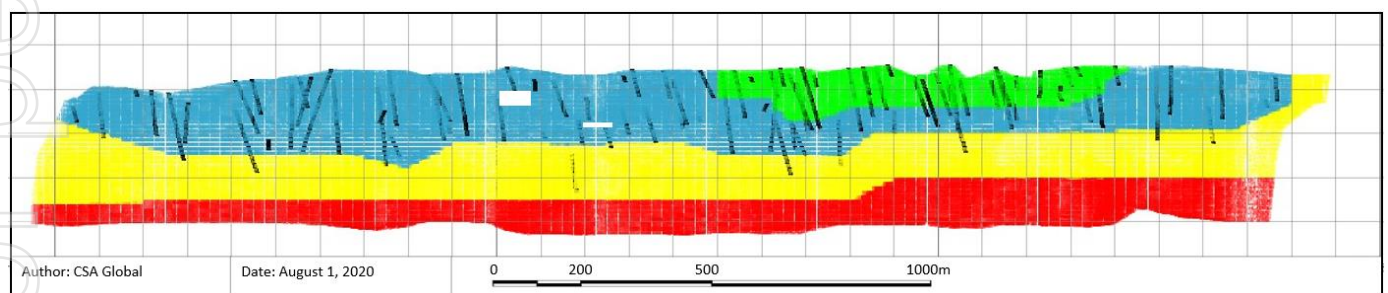


Figure 1 Longitudinal section of Moonshine (west) domain, showing Mineral Resource classification (green=Measured, cyan=Indicated, yellow=Inferred, red=unclassified), and drill hole intercepts (black traces). Grid square 100m. View to east

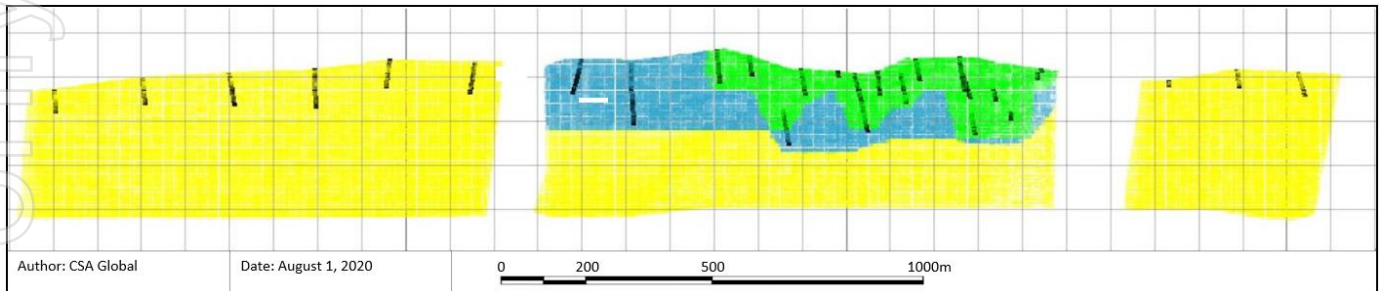


Figure 2 Longitudinal section of Moonshine North (west) domain, showing Mineral Resource classification (green=Measured, cyan=Indicated, yellow=Inferred), and drill hole intercepts (black traces). Grid square 100m. View to east

Mineral Resource Estimates

The Mineral Resources are reported above a Davis Tube Recovery (“DTR”) mass recovery of 15% and presented in Tables 1-3. Previous resource estimates for the Snark, Clark Hill North, Clark Hill South and Sandalwood deposits¹ have been reviewed and reported in accordance with the JORC Code (2012 Edition). Locations of the various deposits are presented in Figure 3.

Table 1 Mineral Resource estimate, Moonshine and Moonshine North, where DTR>15%

Category	Tonnes (MT)	Head Grade (%)					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	31.0	66.1	0.017	6.7	0.1	-0.1
Sub-total	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

Table 2 Mineral Resource estimate, Sandalwood, Clark Hill North, Clark Hill South and Snark, where DTR>15%

Deposit	Category	Tonnes (MT)	Head Grade (%)				Concentrate Grade (%)					
			Fe	SiO ₂	Al ₂ O ₃	LOI	DTR	Fe	P	SiO ₂	Al ₂ O ₃	LOI
Sandalwood	Inferred	334	31.1	48.4	1.5	-0.6	33.1	64.7	0.03	9.5	0.06	-2.7
Snark	Inferred	69	27.8	49.8	1.6	2.4	23.4	66.2	0.03	7.5	0.13	-2.8
Clark Hill North	Inferred	130	25.8	42.6	1.7	0.14	33.2	62.4	0.04	12.1	0.16	-2.6
Clark Hill South	Inferred	15	32.3	47.0	0.6	0.02	31	63.8	0.02	9.8	0.14	0.0



Table 3 Mineral Resource estimate, all deposits, where DTR>15%

Category	Tonnes (MT)	Head Grade (%)					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	31.0	66.1	0.017	6.7	0.1	-0.1
Sub-total	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	997.0	28.4	0.05	49.6	1.3	0.6	30.6	64.6	0.03	9.2	0.1	-1.5

Notes (for all Tables):

- Figures contained within the Tables have been rounded.
- Resource estimates are based on block models constructed using three dimensional geological wireframes.
- Mineral Resources are reported from the block models above a DTR cut-off grade of 15%
- Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.

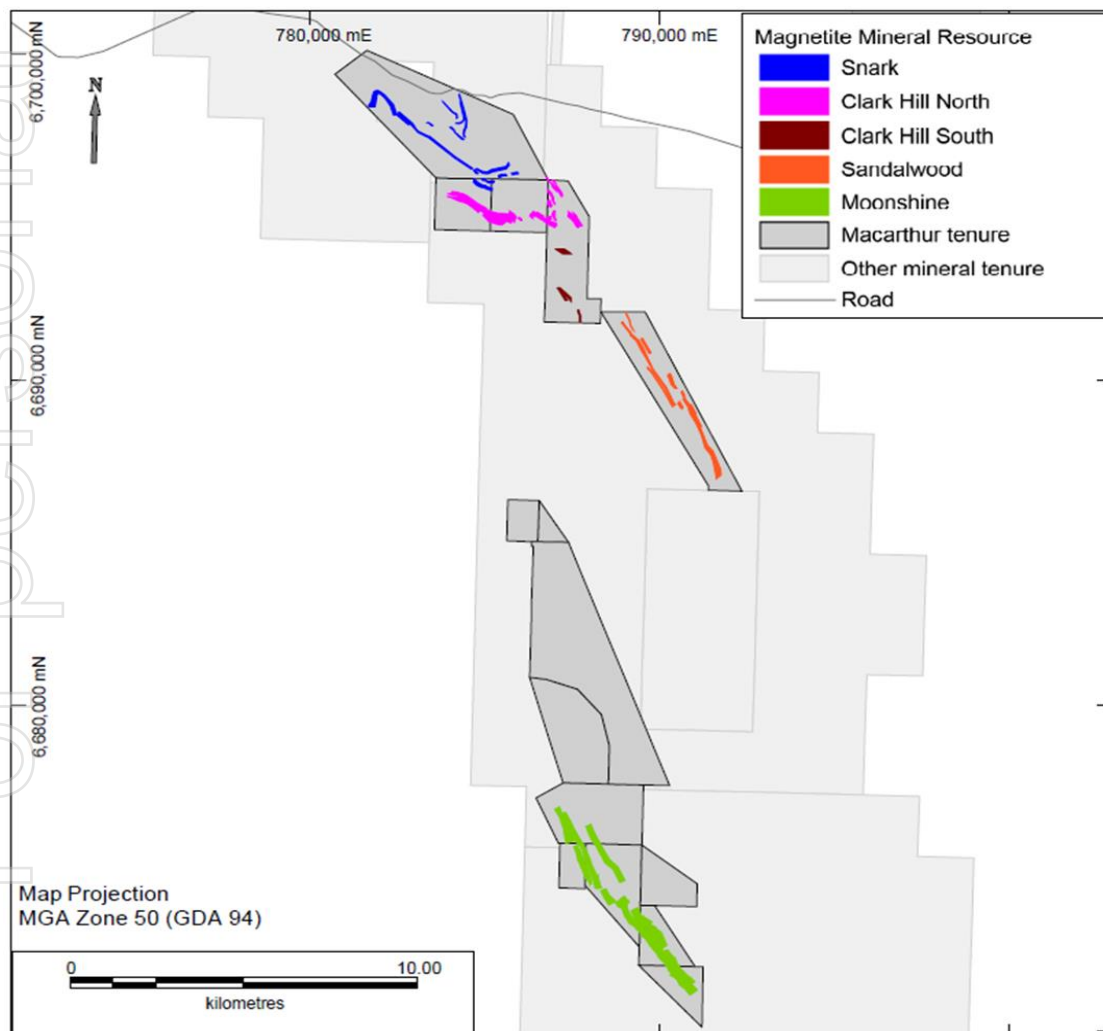


Figure 3 Plan view of the Mineral Resources of the Lake Giles Iron Project

¹ NI 43-101 Technical Report filed December 17, 2009, titled "NI 43-101 Technical Report on Lake Giles Iron Ore Project: Western Australia."

² NI 43-101 Technical Report filed June 13, 2019, titled "NI43-101 Technical report, Macarthur Minerals Limited, Preliminary Economic Assessment Lake Giles Iron Project."



On behalf of the Board of Directors, Mr Cameron McCall, Executive Chairman

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JORC Reporting Tables and Competent Person

The Mineral Resource estimates presented herein have previously been released to the ASX on August 12, 2020 including supporting JORC reporting tables. No new information is presented.

The information in this report that relates to Mineral Resources is based on, and fairly reflects, information compiled by Mr David Williams, a Competent Person, who is an employee of CSA Global Pty Ltd, a member of the ERM group of companies, and a Member of the Australian Institute of Geoscientists (#4176). Mr Williams has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves (JORC Code). Mr Williams consents to the disclosure of information in this report in the form and context in which it appears.

Company profile

Macarthur is an iron ore development, gold and lithium exploration company that is focused on bringing to production its Western Australia iron ore projects. The Lake Giles Iron Project mineral resources include the Ularring hematite resource (approved for development) comprising Indicated resources of 54.5 million tonnes at 47.2% Fe and Inferred resources of 26 million tonnes at 45.4% Fe; and the Lake Giles magnetite resource of 53.9 million tonnes (Measured), 218.7 million tonnes (Indicated) and 997 million tonnes (Inferred). Macarthur has prominent (~721 square kilometer tenement area) gold, lithium and copper exploration interests in Pilbara region of Western Australia. In addition, Macarthur has lithium brine Claims in the emerging Railroad Valley region in Nevada, USA.

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Caution Regarding Forward Looking Statements

Certain of the statements made and information contained in this press release may constitute forward-looking information and forward-looking statements (collectively, “forward-looking statements”) within the meaning of applicable securities laws. All statements herein, other than statements of historical fact, that address activities, events or developments that the Company believes, expects or anticipates will or may occur in the future, including but not limited to statements regarding expected completion of the Feasibility Study; conversion of Mineral Resources to Mineral Reserves or the eventual mining of the Project, are forward-looking statements. The forward-looking statements in this press release reflect the current expectations, assumptions or beliefs of the Company based upon information currently available to the Company. Although the Company believes the expectations expressed in such forward-looking statements are based on reasonable assumptions, such statements are not guarantees of future performance and no assurance can be given that these expectations will prove to be correct as actual results or developments may differ materially from those projected in the forward-looking statements. Factors that could cause actual results to differ materially from those in forward-looking statements include but are not limited to: unforeseen technology changes that results in a reduction in iron or magnetite demand or substitution by other metals or materials; the discovery of new large low cost deposits of iron magnetite; the general level of global economic activity; failure to complete the FS; inability to demonstrate economic viability of Mineral Resources; and failure to obtain mining approvals. Readers are cautioned not to place undue reliance on forward-looking statements due to the inherent uncertainty thereof. Such statements relate to future events and expectations and, as such, involve known and unknown risks and uncertainties. The forward-looking statements contained in this press release are made as of the date of this press release and except as may otherwise be required pursuant to applicable laws, the Company does not assume any obligation to update or revise these forward-looking statements, whether as a result of new information, future events or otherwise.