MACARTHUR Minerals

News release

For Immediate Dissemination

15 March 2022

MAIDEN ORE RESERVE FOR LAKE GILES MAGNETITE PROJECT TOTALS 237 MILLION TONNES - SUPPORTING A 25 YEAR MINE LIFE

Macarthur Minerals Limited (ASX: MIO) (TSX-V: MMS) (OTCQB: MMSDF) (the **Company** or **Macarthur**) is pleased to announce a maiden Mineral Reserve Statement for the Lake Giles Iron Project as at 15 March 2022.

The Mineral Reserve defined for the Lake Giles Iron Project, incorporates the Moonshine and Moonshine North magnetite deposits. The Lake Giles Iron Project is 100% owned by Macarthur Iron Ore Pty Ltd, (a wholly owned subsidiary of Macarthur Minerals Limited). The Mineral Reserve has been incorporated into a Feasibility Study which demonstrates a technically and economically viable project. The final Feasibility Study will be released to the market in the next 45 days. Mineral Reserves are reported in accordance with the CIM Definition Standards on Mineral Resources and Reserves (CIM Definition Standards).

HIGHLIGHTS

- Maiden Mineral Reserve totals 237 million tonnes of iron ore at Probable/Proven classification.
- Mineral Reserve contains 74 million dry tonnes of iron ore concentrate for a 25-year mine life, based on 87% of the Indicated and Measured Mineral Resources.
- Mineral Reserves support a positive Feasibility Study (to be released within 45 days of this release).

Project Location

The Lake Giles Iron Project is located 250 km northwest of Kalgoorlie in the Yilgarn region of Western Australia.

Regional Geology and Geological Interpretation

The Mineral Reserve forms part Indicated and Measured Mineral Resources of the Lake Giles Iron Project encompassing the Moonshine and Moonshine North magnetite deposits. The Mineral Resource estimate was completed by CSA Global Pty Ltd (CSA Global) and previously reported to the market on 11 August 2020. The Company confirms that all assumptions and technical parameters underpinning the Mineral Resource estimates continue to apply and have not materially changed. Detailed discussion of the project geology and Mineral Resource estimation methodology are detailed in release available here.

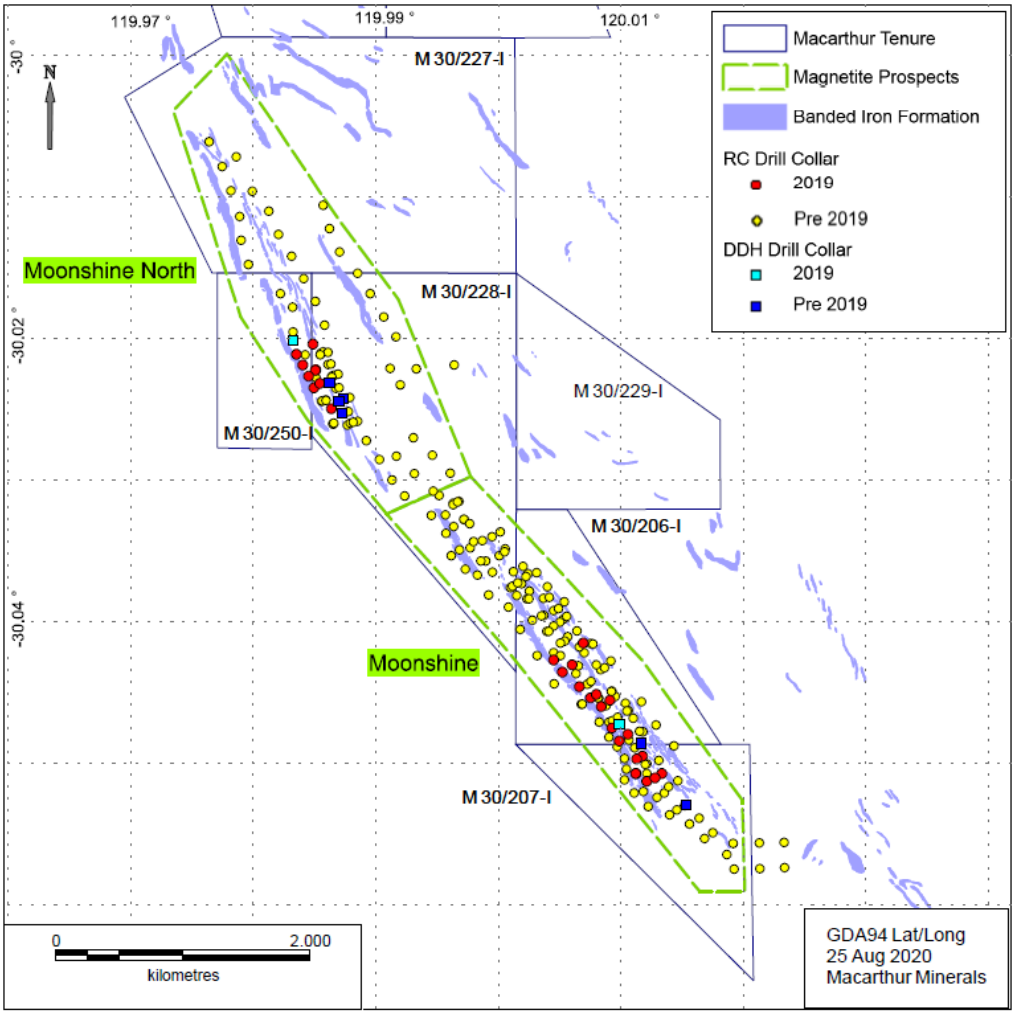

Figure 1. Plan view of Moonshine magnetite deposits of the Lake Giles Iron Project

Mineral Resource and Mineral Reserve Statement

The Mineral Resource estimate was completed by CSA Global Pty Ltd (CSA Global) and previously reported to the market on 11 August 2020. Mineral Resources for the Moonshine and Moonshine North deposits are presented in Table 1.

Table 1. Mineral Resources – Lake Giles Iron Project, Moonshine and Moonshine North, DTR >15%

Category	Tonnes	Head Grades (%)					Concentrate Grades (%)					
	(Mt)	**Fe**	**P**	**SiO_2**	**Al_2O_3**	**LOI**	**DTR**	**Fe**	**P**	**SiO_2**	**Al_2O_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
Subtotal	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

Notes

(a) Figures contained within the Tables have been rounded.
(b) Resource estimates are based on block models constructed using three dimensional geological wireframes.
(c) Mineral Resources are reported from the block models above a DTR cut-off grade of 15%.
(d) Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability.
(e) All Mineral Resources are reported on a dry-tonnage basis.
(f) Mineral Resources are reported inclusive of the Mineral Reserve.

The Mineral Reserve estimate was prepared by Orelogy Consulting Pty Ltd (Orelogy) based on the diluted resource block model. The Mineral Reserve for the Lake Giles Iron ore Project is estimated at 237 Mt at an average grade of 28.2% Fe and DTR of 31.3%, as presented in Table 2.

Table 2. Mineral Reserves – Lake Giles Iron Project, Moonshine and Moonshine North, DTR >15%

Category	Tonnes (Mt)	Head Grades (%)					Concentrate Grades (%)					
		Fe	SiO_2	Al_2O_3	P	LOI	DTR	Fe	SiO_2	Al_2O_3	P	LOI
Moonshine												
Proven	34.2	28.1	51.6	1.2	0.04	1.7	30.5	65.9	6.8	0.2	0.02	-0.6
Probable	166.4	27.2	51.9	1.4	0.05	1.4	30.7	66.6	6.2	0.1	0.02	0.0
Sub-total	**200.6**	**27.4**	**51.9**	**1.4**	**0.04**	**1.4**	**30.6**	**66.5**	**6.3**	**0.1**	**0.02**	**-0.1**
Moonshine Nth												
Proven	17.8	35.4	35.4	2.2	0.06	4.2	34.3	66.5	5.0	0.3	0.03	-0.9
Probable	18.2	30.4	44.7	1.3	0.05	2.9	35.9	63.2	9.4	0.2	0.04	-0.3
Sub-total	**36.0**	**32.9**	**40.1**	**1.7**	**0.05**	**3.5**	**35.1**	**64.8**	**7.3**	**0.3**	**0.05**	**-0.6**
Combined												
Proven	51.9	30.6	46.0	1.5	0.05	2.6	31.8	66.1	6.1	0.2	0.03	-0.7
Probable	184.7	27.6	51.2	1.4	0.05	1.5	31.2	66.2	6.6	0.1	0.02	-0.1
TOTAL	**236.6**	**28.2**	**50.1**	**1.4**	**0.05**	**1.8**	**31.3**	**66.2**	**6.5**	**0.1**	**0.02**	**-0.2**

Notes

(a) The Mineral Reserve is reported in accordance with JORC Code 2012 and Canadian Institute of Mining, Metallurgy and Petroleum "CIM Definition Standards for Mineral Resources and Mineral Reserves" (CIM, 2014).

(b) The Mineral Reserve was evaluated using a 62% Fe benchmark price of USD100/dmt with a 20% premium for 65% Fe and concomitant Fe concentrate grade bonus.

(c) Mineral Reserves are based on a Feasibility Study utilising Mineral Resources from Moonshine and Moonshine North deposits.

(d) Mineral Reserves account for mining dilution and mining ore loss.

(e) A Davis Tube Mass Recovery (DTR MR) cut-off grade of 15% was applied prior to scheduling for 2022 reserves estimate.

(f) Proven Mineral Reserves are based on Measured Mineral Resources only and Probable Mineral Reserves are based on Indicated Mineral Resources only.

(g) Mineral Reserves are reported on a Dry Tonnage Basis.

(h) Mineral Reserves are a part of Mineral Resources.

(i) The sum of individual amounts may not equal due to rounding.

Mineral Reserves Estimation Methodology

The mine design and Mineral Reserve estimate have been completed to a level appropriate for a feasibility study and are consistent with the CIM definitions for public reporting. The Mineral Reserve estimate is based on Measured and Indicated (MI) mineral resources only. Inferred material has been classified as waste.

The mining strategy is based on Contractor mining with Macarthur providing management and technical oversight. Conventional open pit mining using 400 t excavators and 180 t rigid dump trucks was selected as the most appropriate mining method for the contract mining operation. Drill and blast will be undertaken on 10 m bench and mined in 5 m flitches.

Waste will be hauled to external waste rock dumps. Ore will be hauled to the ROM pad and either tipped directly into the primary crusher feed bin or placed onto a ROM finger stockpile for later rehandling using a front-end loader.

The two pits will be mined in a total of seven stages – two for Moonshine North and five for Moonshine. Each stage will require pre-stripping of the oxidised material to a depth of approximately 55 m prior to commencing ore mining procedures. Each stage has been designed with separate ramp access using dual lane ramps except for the final two benches where single lanes were adopted. The cutback distance between stages targeted a mining width of 120 m to provide sufficient working room for the mining equipment.

Pit Optimisation

A mining model was developed for a proposed open pit mining method. Overall mining dilution was 2.5% at an average grade of 14% DTR and ore losses were 2.0% at an average grade of 30% DTR.

Open pit optimisation was conducted to determine the optimal economic geometry of the open pits. A cut-off grade of 15% DTR was used for ore definition. This was rounded up from the calculated breakeven cut-off grade of 14.2% DTR. The pit optimisation was undertaken in Whittle software using the parameters presented in Table 3.

Table 3. Pit Optimisation parameters

Optimisation Parameter	**Unit**	**Value**
Financial Parameters		
Iron Ore Price for 66% Product	USD/t concentrate	125
Shipping and Insurance	USD/t concentrate	13.20
Price FOB	USD/t	111.80
Exchange rate	USD: AUD (A$)	0.73
Government Royalty	%	5.0
Net Price	**A$/t**	**145.49**
Discount Rate	%	8.0
Selling Parameters		
Concentrate Production	Mt/a (wet)	3.3
Road transport	A$/wt concentrate	9.09
Rail transport	A$/wt concentrate	15.64
Port Charges	A$/wt concentrate	7.58
Moisture content	%	9.0
Total selling cost	**A$/dt concentrate**	**29.64**
Processing Parameters		
Design throughput capacity	Mt/a (dry)	9.68
Owner Mining Overhead	A$/dt ore	1.26
Grade control	A$/dt ore	0.13

Ore mining premium:	> 265 mRL: < 265 mRL:	A$/dt ore A$/dt ore	*OMP = (5.093 x LN (Bench RL) – 30.32)/SG* *OMP = (-0.039 x (Bench RL) + 8.11)/SG*
Ore Blasting premium		A$/dt ore	0.33
Ore Feed Rehandle (55%)		A$/dt ore	0.80
Reclaim from Stockpile (20% of ore mined)		A$/dt ore	0.49
Dry reject rehandle (149 t/h)		A$/dt ore	0.31
Crushing		A$/dt ore	0.84
Processing		A$/dt ore	10.21
Tailings & Filtration		A$/dt ore	0.97
Site general and administration		A$/dt ore	1.13
Sustaining Capital		A$/dt ore	0.30
TOTAL Processing Cost (excl. OMP)		**A$/dt ore**	**16.44**
Mining parameters			
Mining rate		Mt/a	45
Slopes (OSA):	Oxide Moonshine Nth HW Oxide others Fresh FW (Domains1, 3, 4) Fresh HW (Domain 6A) Fresh HW (Domains 2, 5, 6B)	Degrees Degrees Degrees Degrees Degrees	27 33 41 37 41
Drill and Blast:	Oxide waste Fresh Waste	A$/dt A$/dt	0.50 0.81
Load and Haul waste		A$/dt	*MCAF = (0.0000736 x (Bench RL)^2 – 0.0723 x (Bench RL) + 22.58)/SG*

Scheduling Inventory

The shell with a revenue factor of 0.88 was selected as the basis for design. Stage design was guided by the nested pit shells and practical design considerations for the selected mining fleet. The mine inventories for each stage, as summarised in Table 4, were imported to Evolution scheduling software to generate the LOM schedule. Figure 1 shows the nested stage designs within the overall pit design.

Table 4. Scheduling Inventory reported by Stage

Stage	Ore	Grades							Waste	Total	Strip Ratio
	Mt	Fe %	SiO2 %	Al2O3 %	P %	S %	LOI %	DTR %	Mt	Mt	W:O
1	22.4	28.3	50.5	1.5	0.05	1.2	1.2	31.2	81.9	110.2	2.9
2	7.8	31.3	44.3	1.3	0.05	1.3	3.0	35.1	53.6	61.3	6.9
3	28.2	33.3	39.0	1.8	0.06	1.5	3.7	35.1	64.0	86.2	2.9
4	22.2	27.8	51.6	1.2	0.05	0.9	1.4	31.2	52.8	75.2	2.4
5	69.9	27.3	51.9	1.3	0.05	1.0	1.4	30.7	152.6	222.5	2.2
6	55.9	27.4	52.1	1.3	0.05	0.9	1.4	31.1	133.9	189.9	2.4
7	30.2	26.7	52.7	1.8	0.04	1.1	1.7	28.5	77.9	108.1	2.6
TOTAL	**236.6**	**28.2**	**50.1**	**1.4**	**0.05**	**1.1**	**1.8**	**31.3**	**616.8**	**853.4**	**2.6**

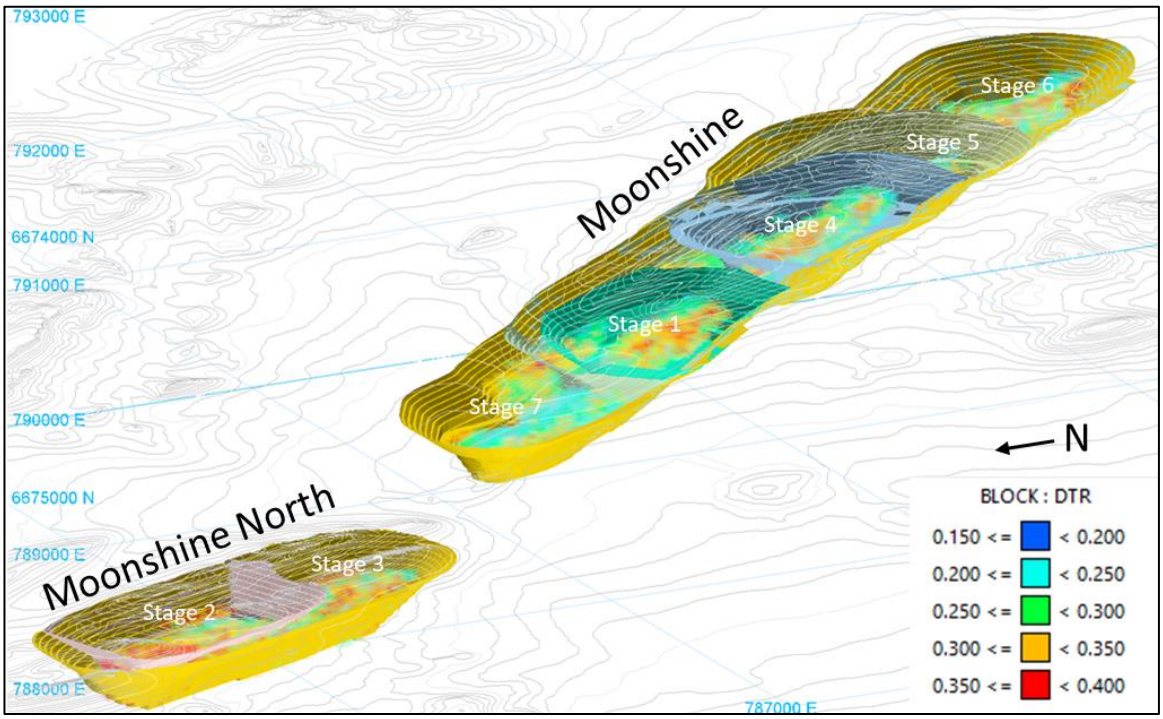

Figure 2. Moonshine and Moonshine North pits showing stages and mineralisation coloured by DTR

Mine Scheduling

The Moonshine North pit has ore with higher DTR head grade and higher Silica in concentrate values than Moonshine and consequently the two pits are scheduled to be mined at the same time as part of the blending strategy.

The mine schedule has a 9-month pre-strip period and requires a mining rate of approximately 43 Mt per year to balance waste stripping requirements with continuous ore supply and the blending strategy. The mining sequence is presented in Figure 3.

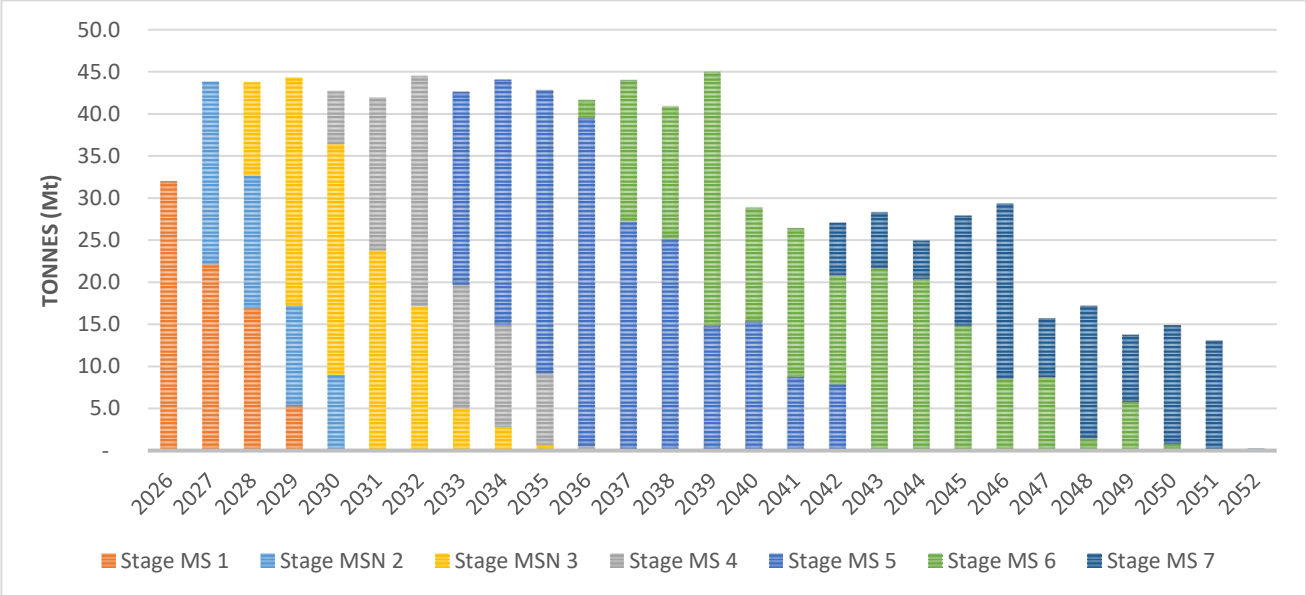

Figure 3. Overall mining rate by stage

Approximately, 65% of the ore from both pits is categorised as high DTR material and sent directly to the ROM pad for processing. The low DTR material is split into high silica and low silica stockpiles and used to control the silica content of the concentrate. Figure 4 shows the ore feed blend with constant silica grade and DTR grade gradually reducing over time.

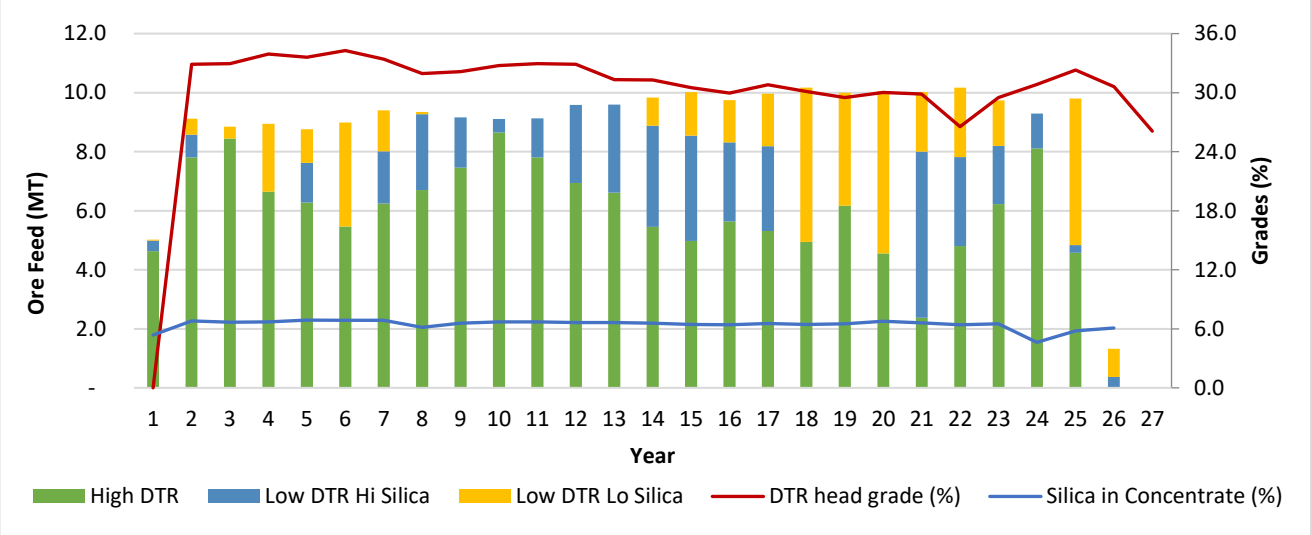

Figure 4. Ore feed blend showing DTR head grade and Silica in concentrate grade

Processing Methods and Assumptions

The proposed flow sheet is based on conventional gyratory crushing/ cone crushing followed by HPGR grinding. Product from the HPGR is screened with the +12 mm returning to the HPGR, the -12 +3 mm material undergoes dry magnetic separation with the magnetics returning to the HPGR and the non-magnetics being discarded. The -3 mm material is fed to two ball mills followed by magnetic separation with the magnetics undergoing further size reduction to P80 38 microns in two vertimills followed by magnetic separation. Reverse flotation of the magnetic concentrate is followed by a final stage of magnetic separation. The concentrate produced is dried using pressure filtration and then transferred to the product stockpile.

The above process will yield a saleable magnetite concentrate with a LOM grade of 66% Fe. The process is well tested, widely used in the mining industry and there are no novel steps in the flowsheet.

Tailings is directed to a wet tailings impoundment from which process water is recovered. The tailings storage facility (TSF) design was undertaken by engineering consultants Stantec. The TSF utilises available topography at the project with waste ore and borrow pits contemplated as construction materials with future raises utilising processing by- products. Mine closure and rehabilitation assume profiling and seeding of the TSF based on high settling and local evaporation rates.

Environment and Approvals

An environmental impact assessment is required to obtain environmental approval for development. The Company has commenced the scoping process to identify the key environmental risks and level of survey to be undertaken. The Company has mapped out an approval pathway and schedule for the primary and secondary approvals required and intends to commence desktop and baseline surveys at the conclusion of the feasibility study. The Company has previously gained EPA approval for its adjacent hematite project and is not aware of any major environmental obstacles that would prevent approval of the Project.

Native Title and Heritage

The Project sits within the Marlinyu Ghoorlie native title claim. The claim was registered on 28 March 2019 but is currently not determined. Native title rights in registration or grant give claimants the right to negotiate during the grant of mineral tenure. Macarthur's Mining Leases were all granted prior to registration of the Native Title claim and the current claim does not confer rights to negotiate or affect the tenure. There were no Native Title claims over the area at the time of grant and therefore no access agreements were required to be negotiated with Claimants.

Current applications for tenure as described below are subject to native title. Macarthur is currently progressing heritage agreements with the native title claimants to progress the tenure to grant.

Heritage surveys have been conducted in accordance with EPA Guidance Statement No. 41 (EPA 2004a) across some areas, including both archaeological and ethnographical surveys. To date, one archaeological site has been identified within the Project area. The location of the heritage site does not impact the Project and a suitable buffer distance has been employed to avoid any impact to the site. Additional surveys will be undertaken with the traditional owners across outstanding project areas in due course.

Tenure

The Lake Giles Iron Project includes 15 granted mining leases covering a total area of approximately 6,256 Ha. All tenements are 100% controlled by Macarthur Iron Ore Pty Ltd (MIO), a 100% owned subsidiary of Macarthur, as itemised in Table 5. MIO has also made applications for miscellaneous licences to support supporting infrastructure of the Project and to explore for groundwater resources.

MIO has entered into an agreement with Arrow Minerals to acquire adjacent tenure to locate the proposed processing plant, waste rock dumps, tailings storage facility and other supporting infrastructure. An application for a general purpose lease is in progress.

The tenements are not subject to any royalty agreements or encumbrances that would restrict the ability to exploit the Mineral Reserve.

Table 5. MIO Tenure Details and Expenditure Commitments

Tenement ID	Holder	Area (ha)	Grant or (Application) Date	Expiry date	Annual expenditure Commitment (A$)
M30/0206	MIO	189	02/07/2007	01/07/2028	$18,900
M30/0207	MIO	171	02/07/2007	01/07/2028	$17,100
M30/0213	MIO	258	13/06/2011	12/06/2032	$25,800
M30/0214	MIO	260	13/06/2011	12/06/2032	$26,000
M30/0215	MIO	521	13/06/2011	12/06/2032	$52,100
M30/0216	MIO	55	13/06/2011	12/06/2032	$10,000
M30/0217	MIO	114	13/06/2011	12/06/2032	$11,400
M30/0227	MIO	504	13/06/2011	12/06/2032	$50,400
M30/0228	MIO	362	02/07/2007	01/07/2028	$36,200
M30/0229	MIO	205	02/07/2007	01/07/2028	$20,500
M30/0248	MIO	585	22/02/2012	21/02/2033	$58,500
M30/0249	MIO	1206	22/02/2012	21/02/2033	$120,600
M30/0250	MIO	102	05/03/2013	04/03/2034	$10,200

M30/0251	MIO	1246	27/11/2012	26/11/2033	$124,600
M30/0252	MIO	478	27/05/2013	26/05/2034	$47,800
E15/7775	MIO	590	(24/06/20)		$15,000
L15/409	MIO	97	(25/06/20)		NA
L16/133	MIO	923	(25/06/20)		NA
L30/89	MIO	23663	(26/03/21)		NA
L30/92	MIO	31660	(26/03/21)		NA

Andrew Bruton, CEO of Macarthur Minerals commented:

"The release of the Maiden Mineral Reserve Statement for the Lake Giles Iron Project will support a positive Feasibility Study for the project.

Macarthur has worked hard over the course of the last 12 months to deliver this result, and the Company looks forward to releasing the Feasibility Study shortly."

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

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Competent / Qualified Person Statement

Mineral Resources:
The Mineral Resources for the Lake Giles Iron Project disclosed in this press release have been estimated by Mr. David Williams, BSc (Hons), a member of the Australian Institute of Geoscientists. Mr Williams, an employee of CSA Global Pty Ltd and Independent Qualified Person, has reviewed and approved the above technical information relating to the Mineral Resource estimates contained in this release, in the form and context in which it appears.

Mineral Reserves:
The information in this report relating to Mineral Reserves is based on information compiled by Stephen Craig, a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Craig is a full-time employee of Orelogy Consulting Pty Ltd. Mr. Craig has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as an independent Qualified Person as defined by NI43-101. Mr Craig consents to the inclusion in the report of the matters based on their information 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 also holds 24 square kilometre tenement area iron exploration interests in the 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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