**NEWS RELEASE**
December 10, 2019

**Symbols: TSX-V: MMS, ASX: MIO**
For Immediate Dissemination

# MACARTHUR MINERALS INTERSECTS HIGH GRADE MAGNETITE AT ITS LAKE GILES IRON PROJECT IN WESTERN AUSTRALIA

**Macarthur Minerals Limited (TSX-V: MMS) (ASX: MIO)** (the "Company" or "Macarthur") is pleased to provide an update on the recent infill drilling program at its Lake Giles Iron Project in the Yilgarn region of Western Australia. Infill Drilling has intersected a zone of high-grade magnetite mineralisation identified previously at the Moonshine North deposit and assay results have been received for several Reverse Circulation (RC) drill holes.

The drilling programme commenced on 17 August 2019 and concluded on 8 December 2019 with a total of 21 RC holes and nine diamond drill holes completed.

The results of the drilling campaign have shown a successful intersection of high-grade magnetite mineralisation. Previous test work has demonstrated the potential to produce a processed high-grade magnetite concentrate of approximately 68-69%.

## HIGHLIGHTS

- Reverse Circulation drilling has successfully intersected the previously identified high grade magnetite mineralisation at Moonshine North.
    - Hole LGRC_2160 intersected an interval 86m to 180m (94m) averaging 40.51% Fe (including the interval 121m to 171m with a grade of 47.52% Fe).
    - Hole LGRC_2166 intersected the interval 95m to 152m (57m) averaging 40.23% Fe (including the interval 129m to 147m with a grade of 60.64% Fe).
- Diamond drill hole LGDD_071 drilled at Moonshine North has also intersected the high-grade magnetite mineralisation from a down hole depth of 91.5m to 162.74m (71.24m) with strong visual magnetite content (Photo 1).


***Photo 1 - Strong magnetite mineralisation at Moonshine North Zone in diamond drill hole LGDD_071***

Mr Cameron McCall, Executive Chairman of Macarthur Minerals commented:

*"The Company is extremely pleased with its successful listing on the Australian Securities Exchange (ASX) and the positive market response in the first two days of trading. Macarthur's dual listing on the ASX and the TSX-V will provide the Company with increased opportunities in the pre-development stage of its flagship Moonshine Magnetite Project.*

*With Australia as a major exporter of iron ore to the world and the ASX being the home exchange to some of the world's largest iron ore producing companies, it makes sense for Macarthur to be dual listed in Australia."*

**Moonshine Magnetite Infill Drilling Program**

The majority of the Moonshine and Moonshine North deposits are defined by drill hole spacing of 200m X 200m and classified as an Inferred Mineral Resource of approximately 710 mt at 30.2% Fe[1].

The current infill drilling program has been designed at closer drill hole spacing to upgrade the resource classification for some of the Moonshine and Moonshine North deposits. The planned program included 21 RC drill holes and nine diamond drill holes. The program has concluded with a total of 3,674 metres of RC drilling and 2,673metres of diamond drilling completed.

The drilling program has been designed with the goal of upgrading the resource classification to include Indicated and Measured Mineral Resources. The updated mineral resource, when completed, will underpin the Feasibility Study to be completed for the Lake Giles Iron Project.

The photo below shows the Diamond Drill rig in operation (Photo 2) at the Moonshine North deposit.

**Moonshine North Magnetite Results**

At the Moonshine North deposit, Reverse Circulation and Diamond drilling has successfully intersected the previously identified high grade magnetite mineralisation. Assay results for intervals of high-grade magnetite obtained to date are provided in the table below, NOTE these are drill intersections and not true widths.

| Hole ID | m From | m To | Interval | Fe% | $SiO_2$% | P% | S% | $Al_2O_3$% | LOI |
|---|---|---|---|---|---|---|---|---|---|
| LGRC_2159 | 201 | 287 | 86 | 33.85 | 30.72 | 0.06 | 2.99 | 2.75 | 6.09 |
| | | | | | | | | | |
| INC | 227 | 260 | 33 | 41.58 | 21.71 | 0.08 | 1.82 | 1.86 | 5.2 |
| | | | | | | | | | |
| LGRC_2160 | 86 | 180 | 94 | 40.51 | 20.90 | 0.07 | 2.07 | 2.45 | 7.36 |
| INC | 122 | 162 | 40 | 49.27 | 8.70 | 0.08 | 0.79 | 0.36 | 6.22 |
| LGRC_2161 | 139 | 194 | 55 | 38.39 | 33.15 | 0.06 | 1.55 | 2.09 | 2.42 |
| INC | *156* | *194* | *38* | *41.73* | *33.31* | *0.07* | *0.70* | *0.37* | *0.56* |
| LGRC_2164 | *25* | *107* | *82* | *38.98* | *36.48* | *0.07* | *0.14* | *2.63* | *3.28* |
| | | | | | | | | | |
| INC | *77* | *92* | *15* | *53.28* | *20.46* | *0.09* | *0.03* | *0.05* | *2.47* |
| LGRC_2165 | *29* | *110* | *81* | *37.44* | *36.15* | *0.05* | *0.7* | *1.57* | *4.22* |
| | | | | | | | | | |
| INC | *48* | *77* | *29* | *47.78* | *27.11* | *0.06* | *1.2* | *0.48* | *2.35* |
| | | | | | | | | | |
| LGRC_2166 | *95* | *152* | *57* | *40.23* | *28.87* | *0.07* | *3.81* | *2.96* | *4.66* |
| | | | | | | | | | |
| INC | *129* | *147* | *18* | *60.64* | *7.05* | *0.11* | *0.67* | *0.49* | *-0.26* |
| | | | | | | | | | |

[1] NI43-101 Technical Report filed June 17, 2019, titled "Macarthur Minerals Limited, Preliminary Economic Assessment Lake Giles Iron Project, Western Australia", NI43-101 Technical Report – Preliminary Assessment

Analytical results are pending for a further eight holes also drilled at Moonshine North, all of which include visually logged intervals with a high percentage of magnetite content.

Preliminary metallurgical test work on a sample of similar iron grade obtained from hole LGRC_203 drilled at Moonshine North previously showed great potential to obtain a high-grade magnetite concentrate[1]. Single and two-staged Low Intensity Magnetic Separation (LIMS) obtained concentrate grades ranging from 67.3% to 68.4% Fe and 4.2% to 5.0% $SiO_2$ with high mass recoveries of 57.8% to 60.3%. Material of higher head grade is likely to result in higher mass recovery in comparison to the conservative design criteria of 38% used in the Preliminary Economic Assessment, 2019[1].

***Photo 2 - Diamond Drill Rig in Operation at Moonshine North - Hole LGDD_071***

**Update of the Moonshine/ Moonshine North infill drilling program**

Since the release of the Preliminary Economic Assessment[1] the company commenced its work for a Feasibility Study (FS). The study is well underway with the infill drilling program completed on 8 December 2019. Analytical results have been returned for the first two batches of RC samples and 4 ½ diamond holes. A third batch of the remaining core samples is in transit to the laboratory. Davis Tube analysis results are awaited. The table below provides analytical results of the programme returned from the SGS Australia Pty Ltd laboratory in Perth. SGS Australia Pty Ltd is a Member of the SGS Group that provides analytical services throughout the world. All samples were dispatched to SGS Perth Laboratory. On completion of each drill hole the calico sample bags were placed in poly-weave bags and transferred to the Ularring exploration compound where they were securely stored. The poly-weave bags were placed in large bulka bags and transported to the assay laboratory depot in Kalgoorlie and then Perth using a contracted freight company.

At all times the samples were under the security of either Macarthur or the transport company personnel, and then under the security of the laboratory. Rip tie security tags were used to secure all samples. Pulp samples were analysed using Borate Fusion with XRF finish (laboratory analytical code XRF78L), considered the industry standard practice for iron ore. Industry standard certified reference materials (CRMs) and blanks were utilized in order to check laboratory assay quality control. The insertion rate for CRMs is a nominal 1 in 20. Different CRMs have been selected for use at varying Iron grades over the life of the project. The combined insertion rate of pulp blanks and CRMs is a nominal 1 in 20 samples. The QA/QC program includes CRMs, blanks, preparation duplicates and field duplicates and is acceptable according to industry standards. Pulp duplicates were also analysed to test for analytical accuracy.

| HOLE_ID | m FROM | M TO | INTERVAL | Fe% | $SiO_2$% | P% | S% | $Al_2O_3$% | LOI |
|---|---|---|---|---|---|---|---|---|---|
| **RC HOLES** | | | | | | | | | |
| LGRC_2146 | 38 | 81 | 43 | 30.67 | 52.01 | 0.04 | 0.22 | 0.22 | 2.43 |
| AND | 87 | 98 | 11 | 30.40 | 50.44 | 0.04 | 0.27 | 0.10 | 0.97 |
| LGRC_2147 | 103 | 227 | 124 | 28.41 | 50.37 | 0.05 | 1.02 | 1.25 | 0.79 |
| INC | 138 | 222 | 84 | 30.00 | 51.29 | 0.04 | 0.33 | 0.33 | 0.11 |
| LGRC_2148 | 44 | 101 | 57 | 30.99 | 49.80 | 0.04 | 0.18 | 1.33 | 2.26 |
| LGRC_2149 | 24 | 57 | 33 | 30.41 | 53.15 | 0.04 | 0.04 | 0.13 | 2.82 |
| AND | 60 | 77 | 17 | 30.26 | 54.48 | 0.05 | 0.04 | 0.11 | 1.47 |
| AND | 96 | 100 | 4 | 33.33 | 47.65 | 0.04 | 0.02 | 0.05 | 3.74 |
| LGRC_2151 | 91 | 286 (EOH) | 95 | 29.77 | 49.61 | 0.04 | 1.26 | 1.65 | 1.4 |
| INC | 127 | 286 (EOH) | 59 | 33.76 | 49.59 | 0.05 | 0.50 | 0.18 | -0.54 |
| LGRC_2153 | 21 | 75 | 54 | 31.92 | 50.78 | 0.04 | 0.02 | 0.56 | 2.61 |
| LGRC_2154 | 106 | 162 | 56 | 21.12 | 58.69 | 0.04 | 2.43 | 1.16 | 3.07 |
| LGRC_2155 | 43 | 78 | 35 | 33.46 | 49.30 | 0.05 | 0.11 | 0.27 | 1.71 |
| LGRC_2156 | 11 | 78 | 67 | 27.78 | 55.59 | 0.03 | 0.03 | 1.00 | 3.11 |
| LGRC_2159 | 201 | 287 | 86 | 33.85 | 30.72 | 0.06 | 2.99 | 2.75 | 6.09 |
| | | | | | | | | | |
| INC | 227 | 260 | 33 | 41.58 | 21.71 | 0.08 | 1.82 | 1.86 | 5.2 |
| | | | | | | | | | |
| LGRC_2160 | 86 | 180 | 94 | 40.51 | 20.90 | 0.07 | 2.07 | 2.45 | 7.36 |
| INC | 122 | 162 | 40 | 49.27 | 8.70 | 0.08 | 0.79 | 0.36 | 6.22 |
| LGRC_2161 | 139 | 194 | 55 | 38.39 | 33.15 | 0.06 | 1.55 | 2.09 | 2.42 |
| INC | *156* | *194* | *38* | *41.73* | *33.31* | *0.07* | *0.70* | *0.37* | *0.56* |
| LGRC_2164 | *25* | *107* | *82* | *38.98* | *36.48* | *0.07* | *0.14* | *2.63* | *3.28* |
| | | | | | | | | | |
| INC | *77* | *92* | *15* | *53.28* | *20.46* | *0.09* | *0.03* | *0.05* | *2.47* |
| LGRC_2165 | *29* | *110* | *81* | *37.44* | *36.15* | *0.05* | *0.7* | *1.57* | *4.22* |
| | | | | | | | | | |
| INC | *48* | *77* | *29* | *47.78* | *27.11* | *0.06* | *1.2* | *0.48* | *2.35* |
| | | | | | | | | | |
| LGRC_2166 | *95* | *152* | *57* | *40.23* | *28.87* | *0.07* | *3.81* | *2.96* | *4.66* |
| | | | | | | | | | |
| INC | *129* | *147* | *18* | *60.64* | *7.05* | *0.11* | *0.67* | *0.49* | *-0.26* |
| DIAMOND HOLES | | | | | | | | | |
| LGDD_066 | 60 | 178 | 118 | 26.73 | 53.89 | 0.04 | 1.06 | 0.77 | 1.89 |
| INC | 59.2 | 138 | 78.8 | 30.47 | 49.01 | 0.05 | 1.24 | 1.07 | 2.06 |
| | | | | | | | | | |
| AND INC | 84 | 138 | 54 | 32.65 | 48.55 | 0.05 | 0.42 | 0.15 | 0.05 |
| LGDD_067 | 42.6 | 135 | 92.4 | 31.35 | 48.8 | 0.05 | 0.69 | 1.09 | 1.21 |
| INC | 69 | 135 | 66 | 32.88 | 48.04 | 0.05 | 0.37 | 0.34 | -0.1 |
| LGDD_068 | 36 | 158 | 122 | 28.72 | 51.9 | 0.04 | 0.38 | 1.46 | 1.76 |
| INC | 83 | 149 | 66 | 33.5 | 47.86 | 0.05 | 0.41 | 0.19 | 0.54 |
| LGDD_069 | 60 | 77.9 | 17.9 | 27.48 | 50.84 | 0.06 | 2.16 | 0.94 | 6.44 |
| AND | 91.05 | 115 | 23.95 | 34.41 | 46.89 | 0.04 | 0.37 | 0.17 | -0.51 |

The table below gives the surveyed Reverse Circulation drill hole locations plotted as MGA Zone 50

| **HOLE_ID** | EASTINGS | NORTHINGS | DEPTH | DIP | AZIMUTH | DEPTH | COLLAR ELEVATION |
|---|---|---|---|---|---|---|---|
| LGRC_2146 | 790002.018 | 6672370.965 | 0.1 | -59.64 | 241.61 | 150 | 497.67 |
| LGRC_2147 | 790155.121 | 6672346.679 | 0.02 | -59.64 | 241.18 | 282 | 498.46 |
| LGRC_2148 | 790087.161 | 6672300.115 | 0 | -60.13 | 240.53 | 108 | 498.48 |
| LGRC_2149 | 790221.001 | 6672028.59 | 0 | -60.14 | 230.83 | 126 | 506.13 |
| LGRC_2150 | 790164.623 | 6672132.868 | 0 | -60.33 | 227.21 | 132 | 500.56 |
| LGRC_2151 | 790398.494 | 6671905.278 | 0 | -60.61 | 245.79 | 186 | 508.88 |
| LGRC_2152 | 790342.351 | 6671767.248 | 0.11 | -59.96 | 247.61 | 39 | 509.04 |
| LGRC_2153 | 790347.567 | 6671769.409 | 0.11 | -59.96 | 247.61 | 132 | 508.93 |
| LGRC_2154 | 790548.955 | 6671763.555 | 0 | -59.82 | 238.13 | 234 | 508.39 |
| LGRC_2155 | 790428.381 | 6671707.73 | 0 | -60.5 | 221.8 | 114 | 498.10 |
| LGRC_2156 | 789918.71 | 6672458.84 | 0 | -60.2 | 213.48 | 151 | 500.82 |
| LGRC_2157 | 789788.17 | 6672579.123 | 0.15 | -60.24 | 237.28 | 138 | 498.55 |
| LGRC_2158 | 789719.09 | 6672674.802 | 0 | -60.16 | 259.02 | 120 | 493.38 |
| LGRC_2159 | 787889.666 | 6675197.131 | 0 | -60.36 | 234.16 | 294 | 502.94 |
| LGRC_2160 | 787908.094 | 6674996.982 | 0 | -60.28 | 222 | 294 | 486.93 |
| LGRC_2161 | 787904.626 | 6674993.651 | 0 | -77.35 | 229.3 | 261 | 486.27 |
| LGRC_2162 | 787760.846 | 6675122.895 | 0 | -60.51 | 240.45 | 100 | 483.15 |
| LGRC_2163 | 787807.945 | 6675038.13 | 1.47 | -60.59 | 244.4 | 114 | 488.28 |
| LGRC_2164 | 787852.361 | 6674946.706 | 0 | -59.52 | 239.31 | 114 | 486.83 |
| LGRC_2165 | 787888.901 | 6674854.723 | 0 | -60.23 | 244.79 | 130 | 486.6 |
| LGRC_2166 | 788022.367 | 6674690.553 | 0 | -60.61 | 245.02 | 160 | 475.26 |
| | | | | | | | |

A photo of the Reverse Circulation drill rig in action on hole LGRC_2161 at the Moonshine North deposit is shown below (Photo 3) and RC chip samples of materials from the Moonshine North deposit shown in photo 4.


***Photo 3 - Reverse Circulation Drill in action on hole LGRC2161 at Moonshine North.***

***Photo 4 - Reverse Circulation Drill chip samples of materials from the Moonshine North deposit.***

**No New Information**

To the extent that this announcement contains references to prior exploration results and Mineral Resource estimates, which have been cross referenced to previous market announcements (including supporting JORC reporting tables) made by the Company, unless explicitly stated, no new information is contained in accordance with Table 1 checklist in the JORC Code. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of Mineral Resources that all assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

## COMPETENT PERSONS

The information in this press release that relates to Exploration Results is based on information compiled by Mr Ian S Cooper, B.Sc., A.R.S.M., F.G.S. FAusIMM. Mr Cooper is a Fellow of the Australasian Institute of Mining (AusIMM) and has sufficient experience relevant to the style of mineralization and type of deposit under consideration and to the activity they are undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the "JORC Code"). Mr Cooper is a consultant to the Company and consents to the inclusion of the Exploration Results in the form and context in which they appear.

## ABOUT MACARTHUR MINERALS LIMITED (TSX-V: MMS, ASX: MIO)

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 includes the 80 million tonne Ularring hematite resource (approved for development) and the 710 million tonne Moonshine magnetite resource. Macarthur has prominent (~1,281 square kilometer tenement area) gold, lithium and nickel exploration interests in Pilbara region of Western Australia. In addition, Macarthur has lithium brine Claims in the emerging Railroad Valley region in Nevada, USA.

On behalf of the Board of Directors,
**MACARTHUR MINERALS LIMITED**

"*Cameron McCall*"
Cameron McCall, Executive Chairman

**Company Contact**
Joe Phillips, CEO and Director
**Email:** jphillips@macarthurminerals.com
**Telephone:** +61 448899247

**Website:** www.macarthurminerals.com

## THIS NEWS RELEASE IS NOT FOR DISTRIBUTION TO UNITED STATES SERVICES OR FOR DISSEMINATION IN THE UNITED STATES

**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 limited to statements regarding: the proposed strategy regarding core mining, road and rail inputs at the Project; anticipated increases in annual production at the Project; anticipated decreases in Project costs; the possible reclassification of current inferred mineral resources on the Project as indicated mineral resources in the future; expected completion of the FS on the Project containing a new reserve calculation and a new economic assessment; the granting of a license for the Menzies rail siding; the status of the MRRT; and plans to secure mining approvals under the *Mining Act*, 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. With respect to forward-looking statements contained in this press release, assumptions have been made regarding, among other things, the reliability of information prepared and/or published by third parties that are referenced in this press release or was otherwise relied upon by the Company in preparing this press release. 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; future changes in strategy regarding core mining, road and rail inputs with respect to the Project; final Project costs varying from those determined from the EOI program; failure to successfully negotiate a BOO arrangement for the Project; failure to complete the FS; failure of the FS to reflect currently anticipated increases annual production and decreases in expected costs at the Project; the results of infill drilling being insufficient to reclassify current inferred mineral resources on the Project as indicated mineral resources; failure to receive a license for the Menzies rail siding; failure to repeal the MRRT; and failure to obtain mining approvals under the *Mining Act*. 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.

JORC Code, 2012 Edition – Table 1

- **Section 1 Sampling Techniques and Data**

(Criteria in this section apply to all succeeding sections.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Sampling techniques*** | • *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*<br>• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*<br>• *Aspects of the determination of mineralisation that are Material to the Public Report.*<br>• *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.* | Macarthur's Moonshine Magnetite Project was sampled using diamond core and reverse circulation percussion drilling from surface. A total of 213 historic holes have been drilled at this prospect. During the recent program a further 30 holes were completed.<br><br>Diamond (DD) (9 holes) and Reverse Circulation (RCP) (21 holes) were drilled at Moonshine in the recent program. DD samples were predominantly HQ2 and were either cut in half longitudinally or quarter using an Almonte Core saw. Core samples varied from 0.3m to 1m samples. RCP chip recovery method was practiced as before.<br><br>Some compositing of samples is used to reduce costs of DTR analysis, whereby composites of between 1m and 5m are used, depending on the continuity and metre scale head grade decided by a geologist. |
| ***Drilling techniques*** | • *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).* | RCP drill holes were drilled by iDrilling using a Hydco 350 mounted on a 2008 Tatra 8x8 truck |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Drill sample recovery*** | • *Method of recording and assessing core and chip sample recoveries and results assessed.*<br>• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*<br>• *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.* | Diamond core recoveries were recorded by measuring the length of drill core retrieved per metre of drill penetration. RCP samples were weighed and a recovery (%) was estimated per metre of drill penetration.<br><br>If sample recoveries were observed becoming sub-optimal by the project geologist, the information was relayed to the driller who adjusted the drilling penetration rate, or other sample recovery drill rig characteristics such as air compression, in order to improve sample recovery. A geologist was present at the drill rigs at all times whilst drilling procedures were under way, and who logged all drill samples.<br><br>In heavily fractured zones with strong groundwater flow recovery can suffer with appropriate measures being taken. |
| ***Logging*** | • *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*<br>• *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.*<br>• *The total length and percentage of the relevant intersections logged.* | All holes have been logged in detail for lithology, alteration, mineralization, oxidation state, structure and veining. RCP cuttings were logged for various geological attributes including rock type by the mineral composition, mineralization by veining and visible minerals, and alteration including oxidation. Logging is considered sufficient to support geologic modelling and Mineral Resource estimates. Rock, Quality Designation (RQD) and Rock Mass Quality (RMQ) logs were kept for geotechnical purposes to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.<br><br>DD core was logged similar to RCP however in more detail and photographed at the Macarthur Camp. |
| ***Sub-sampling techniques and sample preparation*** | • *If core, whether cut or sawn and whether quarter, half or all core taken.*<br>• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*<br>• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*<br>• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* | Diamond core was cut using an Almonte electric core saw in competent ground and hand split in clay at either 1 m intervals or to geological contacts. RCP samples were collected at the rig using riffle splitters. Samples were generally dry with some areas wet due to perched water tables. Industry standard diamond and RC drilling techniques were used and are considered appropriate for use in Mineral Resource estimation. For RC drilling, sample quality was maintained by monitoring sample volume and by cleaning the splitters on a regular basis. Field duplicates were taken every 20 meters for RC drilling. Quarter splits of core have been taken and recorded as duplicates in the database.<br><br>Sample sizes are considered appropriate for the style of mineralization based on the style of mineralization, the thickness and consistency of the intersections, the sampling methodology, and assay value ranges for Iron Ore. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.*<br>• *Whether sample sizes are appropriate to the grain size of the material being sampled.* | RCP and core samples were securely delivered to SGS (the lab). RCP and Diamond core sample preparation technique was Coarse crush, Dry, Pulverised. Core was prepared by drying, crushing, pulverising to a nominal 85% and 45um then all were analysed using Borate Fusion with XRF finish (XRF78L). |
| ***Quality of assay data and laboratory tests*** | • *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*<br>• *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*<br>• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.* | All samples were dispatched to SGS. Pulp samples were analysed using Borate Fusion with XRF finish (XRF78L), considered the industry standard practice for iron ore. All DTR work was also performed by SGS.<br><br>Industry standard certified reference materials (CRMs) and blanks were utilized in order to check laboratory assay quality control. The insertion rate for CRMs is a nominal 1 in 20. Different CRMs have been selected for use at varying Iron grades over the life of the project. The combined insertion rate of pulp blanks and CRMs is a nominal 1 in 20 samples.<br><br>The QA/QC program includes CRMs, blanks, preparation duplicates and field duplicates and is acceptable according to industry standards.<br><br>Pulp duplicates were also analysed to test for analytical accuracy. |
| ***Verification of sampling and assaying*** | • *The verification of significant intersections by either independent or alternative company personnel.*<br>• *The use of twinned holes.*<br>• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*<br>• *Discuss any adjustment to assay data.* | A total of 9 diamond holes and 21 reverse circulation holes were drilled to develop the Moonshine Magnetite deposit. As some assay results are still pending, these have yet to be verified by an independent or alternative company personnel. |
| ***Location of data points*** | • *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* | Macarthur contracted ABIMS to carry out a DGPS survey of all the holes drilled at Moonshine for the recent program. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | • *Specification of the grid system used.*<br>• *Quality and adequacy of topographic control.* | Down-hole surveys of core holes were performed by the drilling contractor using a Reflex EZ-Giro tool. Measurements were taken every 10 metres down the holes. |
| ***Data spacing and distribution*** | • *Data spacing for reporting of Exploration Results.*<br>• *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.*<br>• *Whether sample compositing has been applied.* | Drill holes were closely spaced at 100 to 200 metres apart.<br>N/A as Exploration data is being reported<br>No compositing of samples for XRF assay was undertaken. |
| ***Orientation of data in relation to geological structure*** | • *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*<br>• *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.* | Holes were generally angled at 60º across the strike of mineralisation, targeting strata typically dipping at 70º to 90º towards the angle of drilling. Some bias of sampling was anticipated based upon the angle of drill hole interception against the dip of haematite bearing strata, however this bias is not considered detrimental to the Mineral Resource estimate. |
| ***Sample security*** | • *The measures taken to ensure sample security.* | On completion of each hole the calico sample bags were placed in polyweave bags and transferred to the Ularring exploration compound where they were securely stored. The polyweave bags were placed in large bulka bags and transported to the assay laboratory depot in Kalgoorlie and then Perth using a contracted freight company. At all times the samples were under the security of either Macarthur or the transport company personnel, and then under the security of the assay laboratory.<br>Rip tie security tags were used to secure all samples. |
| ***Audits or reviews*** | • *The results of any audits or reviews of sampling techniques and data.* | The CP reviewed sampling procedures during the program. Any problems observed were discussed with the geological staff on roster, and the problems were quickly corrected. |

- **Section 2 Reporting of Exploration Results**

(Criteria listed in the preceding section also apply to this section.)

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Mineral tenement and land tenure status*** | • *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*<br><br>• *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.* | At present Macarthur manages 15 contiguous and Mining Leases covering a total area of approximately 62.4 km².<br><br>Macarthur, through its wholly owned subsidiary Macarthur Iron Ore Pty Ltd, is the registered holder for the Tenements. |
| ***Exploration done by other parties*** | • *Acknowledgment and appraisal of exploration by other parties.* | The property was previously explored for nickel (1968 to 1972) and gold (Aztec, Battle Mountain, 1993 to 1998) with limited success. Internickel Australia undertook a detailed evaluation of previous exploration from 2001 to 2005. Macarthur Minerals took over the tenements in 2005 and actively explored until 2014. |
| ***Geology*** | • *Deposit type, geological setting and style of mineralisation.* | The outcropping geology of the project area is comprised of a combination of un-altered silica rich banded iron formations (BIFs) and altered, enriched haematite / goethite BIFs. Weathering has resulted in the leaching of the majority of the silica from the BIFs, thus producing a rock rich in iron and low in silica, near surface. These enriched bands vary from 1m to 30m in true thickness and are largely steeply dipping at 70º-90º. |
| ***Drill hole Information*** | • *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:*<br><br>○ *easting and northing of the drill hole collar*<br><br>○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*<br><br>○ *dip and azimuth of the hole* | Refer to the table in the news release for the list of holes and assays received to date for the current infill drilling program.<br><br>The Moonshine Magnetite Project consists of 294 drill holes that were used to support the Mineral Resource estimate previously disclosed. The exclusion of this information is justified on the basis that the information has been previously released to the ASX with supporting JORC Tables. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | ○ *down hole length and interception depth*<br>○ *hole length.*<br>• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.* | |
| ***Data aggregation methods*** | • *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*<br>• *Where aggregate intercepts incorporate short lengths of high-grade results and longer lengths of low-grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*<br>• *The assumptions used for any reporting of metal equivalent values should be clearly stated.* | RCP and DD drill samples were obtained at 1 m intervals with no sample compositing. Assays of intervals presented are length weighted averages. |
| ***Relationship between mineralisation widths and intercept lengths*** | • *These relationships are particularly important in the reporting of Exploration Results.*<br>• *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*<br>• *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').* | True width of mineralisation is derived from detailed three-dimensional geological rock models.<br><br>Various ore bodies are intercepted at varying degrees of obliqueness, therefore a simple conversion to true thickness from down hole intercepts is not possible.<br><br>General geometry of ore bodies is reported as sub vertical tabular bodies generally dipping between 60° and 90° with true thickness of mineralisation between several metres to 140 m |
| ***Diagrams*** | • *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should* | This news release is not reporting a new discovery. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.* | |
| ***Balanced reporting*** | • *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.* | The accompanying news release is considered to be a balanced report with suitable cautionary notes. |
| ***Other substantive exploration data*** | • *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.* | All substantive data is reported. |
| ***Further work*** | • *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*<br>• *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | Further work involves updating the resource model with the data presented herein. Additional metallurgical testwork including DTR assays will be undertaken to confirm the ability to obtain an economical iron concentrate. |