

## **MACARTHUR MINERALS RECEIVES A POSITIVE PRELIMINARY FEASIBILITY STUDY ON THE ULARRING HEMATITE PROJECT**

### **PFS Highlights**

- The technical and financial evaluation in the Preliminary Feasibility Study (“PFS”) has concluded that, based on the information currently available, the project is economically viable and robust and that further project development is justified.
- Project pre-tax real Net Present Value (“NPV”) of A\$456 million at an 8% discount rate, based on a discounted cash flow model with:
  - a project life of 13 years with saleable product of 60% Fe at 2 million tonnes per annum (“Mtpa”);
  - total sales of 25.77 million tonnes; and
  - no terminal value added to the NPV, which assumes no extension to the plant and/or mine life.
- The project is potentially highly profitable with a discounted payback (based on NPV) in 3 years.
- Operating costs estimated at A\$78/t (rounded).
- Total revenue estimated at A\$3.238 billion (rounded).
- First time release of a Probable Mineral Reserve of 42.95 million tonnes (“Mt”) @ 47% Fe.
- Total capital cost estimated at A\$262.7 million including rehabilitation and sustaining capital expense over life-of-mine (“LoM”) of A\$52.4 million and indirect capital costs of A\$49.1 million.
- Total direct operating costs (including overheads but excluding royalties) are estimated at A\$2.014 billion (rounded).
- Total project costs (direct and indirect operating costs, capital spend including contingency of A\$27 million, and sustaining capital) are estimated at \$2.438 billion (rounded)<sup>1</sup>.

**Macarthur Minerals Limited (TSX: MMS, OTCQX: MMSDF)** (the “Company” or “Macarthur”) is pleased to announce the receipt of the results of the PFS managed by MSP Engineering Pty Ltd (“MSP”), an independent consulting firm, for the Ularring Hematite Project that incorporates the Snark, Drabble Downs, Central and Banjo hematite deposits located within the Company’s tenements in the Yilgarn region of Western Australia. The PFS has evaluated a wet beneficiation process based on Indicated Mineral Resources above a cut-off grade of 40% Fe and previously reported metallurgical test work results (news release dated June 1, 2012) as well as follow-up test work completed in July 2012.

Macarthur’s President, Chairman and CEO, Alan Phillips commented that, *“This study has been 11 months in development but it was important that we get it right. Macarthur does not want to be just another low grade iron ore producer. Instead we are aiming to deliver a high value iron ore product to the market and to be a Company positioned for the long term. Through beneficiation, we can fully utilise Macarthur’s resource inventory and deliver a plus ten year mine life. Moving forward, Macarthur is looking for ways to reduce the capital required, for example by having the beneficiation plant, power and water infrastructure and even the new mining camp being supplied under a third party build, own, operate model and by exploring common user road and rail infrastructure with other nearby iron ore producers. Further, as we advance through the permitting processes, Macarthur is looking at options for early start production which could envisage a small scale high grade operation prior to the commencement of the beneficiation process.”*

<sup>1</sup> The PFS results are based on existing resource estimates, current iron ore pricing and market conditions and consequently, market fluctuations, varied logistics or production costs or recovery rates may render the results of past and future project studies uneconomic and may ultimately result in a future study being very different.

A summary of the PFS results is attached to this release and an updated National Instrument (“NI 43-101”) Technical Report, which includes the results of the NI43-101 Hematite Mineral Resource (news release dated June 29, 2012) will be filed on SEDAR within 45 days of this news release.

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

*“Alan Phillips”*

Alan Phillips, President, Chairman & CEO

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**ABOUT MACARTHUR MINERALS LIMITED (TSX: MMS, OTCQX: MMSDF)**

Macarthur Minerals Limited is an Australian based resource development company currently focused on developing its Ularring Hematite Project, located in the Yilgarn iron ore district in Western Australia. The Ularring Hematite Project is located 110 km from rail infrastructure with a direct connection to the iron ore exporting Port of Esperance, Western Australia.

Macarthur’s Moonshine Magnetite Project has an inferred Mineral Resource of 1.3 Bt at 30.1% Fe (press release dated December 15, 2010; NI43-101 Technical Report dated March 25, 2011).

Positive Preliminary Economic Assessments were released to the market for the Ularring Hematite Project in November 2011 (press release dated November 21, 2011; Technical Report dated January 4, 2012) and for the Moonshine Magnetite Project in February 2011 (press release dated February 7, 2011, Technical Report dated March 25 2011).

**ABOUT MSP ENGINEERING PTY LTD**

MSP Engineering Pty Ltd is a Western Australian based resource development consultancy specialising in the evaluation, engineering design, project management and construction of mineral processing facilities and associated infrastructure, both in Australia and overseas.

Previously known as McSweeney Partners Pty Ltd, with over 40 years’ experience as a leader in its field, MSP has established a reputation for providing simple, innovative and cost efficient solutions that successfully deliver projects which consistently exceed client expectations and performance targets.

MSP has a fully equipped engineering facility with dedicated professional and para-professionals including process, mechanical, structural, civil and electrical engineers, design managers, draftspersons, project managers, construction managers, supervisors and project controllers. Further information is available at <http://www.mspengineering.com.au/>.

**ABOUT CSA GLOBAL PTY LTD**

CSA Global Pty Ltd is a leading geological, mining and management consulting company whose staff includes geologists, mining engineers, project managers, data management professionals and technical personnel. CSA has been operating from Perth, Western Australia since 1986. It is an independent company, with origins dating back to 1984 as part of the CSA Group founded in Ireland. CSA now has offices in the UK, Indonesia, Johannesburg, Vancouver, Darwin and Brisbane. CSA has a high level of expertise in most mineral commodities gained from over twenty years’ experience within the exploration and mining industry at an international level. It has experience in all stages of the mining cycle from project generation to production. For further information regarding CSA Global, please refer to the company website at [www.csaglobal.com](http://www.csaglobal.com)

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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. The forward-looking statements in this press release relate to future events or future performance and reflect the current expectations, assumptions or beliefs of the Company based upon information currently available to the Company and include, but are not limited to, statements with respect to the estimation of mineral reserves and mineral resources, the realization of mineral reserve estimates, the timing and amount of estimated future production, costs of production, capital expenditures, success of mining operations, environmental risks, unanticipated reclamation expenses, title disputes or claims and limitations on insurance coverage. In certain cases, forward-looking statements can be identified by the use of words such as "plans", "expects" or "does not expect", "is expected", "outlook", "budget", "scheduled", "estimates", "forecasts", "intends", "anticipates" or "does not anticipate", or "believes", or variations of such words and phrases or statements that certain actions, events or results "may", "could", "would", "might" or "will be taken", "occur" or "be achieved" or the negative of these terms or comparable terminology. 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. There is no assurance that the results of the pre-feasibility metallurgical test work will be replicated in actual production conditions or that the IRR or NPV will be as projected. Factors that could cause actual results to differ materially from those in forward-looking statements include, among other things, 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 and the general level of global economic activity, changes in project parameters as plans continue to be refined, future prices of mineral resources, possible variations in ore reserves, grade or recovery rates; accidents, dependence on key personnel, labour pool constraints, labour disputes, delays in obtaining governmental approvals or financing or in the completion of development or construction activities, and other risks of the mining industry. 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.

Macarthur Minerals’  
 Ularring Hematite Project  
 Pre-Feasibility Study Results Summary

**1. THE ULARRING HEMATITE PROJECT HISTORY AND MACARTHUR’S STRATEGY**

Macarthur began exploration in 2006-2007 for magnetite iron ore resources on its tenements in the Yilgarn region of Western Australia. In 2009 a 1.316 billion tonnes (“Bt”) magnetite resource (at a 15% Fe cut off) was delineated and a Preliminary Economic Assessment (“PEA”) was released to the market on March 25, 2010. At the time of the study, significant global economic uncertainty made the funding of major capital intensive mining projects such as magnetite projects difficult. In order to achieve commercial operations as early as possible, Macarthur sought to delineate a smaller tonnage of low capital intensity hematite resource for commercial exploitation prior to development of its major Moonshine Magnetite Project.

On November 21, 2011 Macarthur released the results of a PEA on the Ularring Hematite Project within the Company’s tenements in the Yilgarn (NI43-101 Technical Report released January 4, 2012). This PEA identified encouraging results from metallurgical test work. Subsequent follow up metallurgical investigations prompted a change in the Company’s strategy to accommodate beneficiation of the hematite material to produce a high grade, low impurity fine sinter product.

Ideally located, the Ularring Hematite Project is in proximity to rail and port infrastructure as well as all necessary mining support services. Located in an emerging iron ore producing province with a rich resource inventory, these factors combine to provide a favourable framework for delivery of a commercial outcome in the shortest possible time frames. In summary, Macarthur’s corporate strategy is to advance the development of the delineated hematite resource for export, through the expanded Port of Esperance (“Port”). Port development is currently anticipated to be completed by 2015.

Macarthur continues to advance its much larger magnetite iron ore resource and is actively seeking a strategic partner to support the development of this substantial project.

**2. PRELIMINARY FEASIBILITY STUDY 2012 FINDINGS SUMMARY**

Table 1 below provides an overview of the outcomes of the PFS.

**Table 1. Findings PFS 2012**

Categories	PFS 2012	Comments
Project pre-tax real NPV 8%	A\$456 million	The PFS uses May 2012 prevailing pricing assumptions which resulted in long term pricing forecasts being 20% lower than those used in the PEA. To deliver a beneficiated product, the PFS has an additional capital spend of A\$129 million (including sustaining capital) when compared with the PEA capital requirements.
Beneficiation	Yes	
Project Mine Life	13 Yrs	The PEA project life was based on Indicated and Inferred Mineral Resources. The PFS is based on Indicated Mineral Resources only. The PFS case offers for the possibility of Resource extension by further resource definition drilling and exploration of identified

		targets.
Discounted Project Payback	3 Yrs	The PFS uses prevailing pricing assumptions which long term are 20% lower to the pricing assumptions used in the PEA. Capital expenditure (including sustaining capital) increased by \$129 million to produce a beneficiated product.
Total Revenue	A\$3.238 billion	
Operating Costs/t (FOB) (excluding WA Government royalties and other taxes)	A\$78/t	
Capital Spend	A\$263 million	Potential for third party funding of major project elements including the beneficiation plant, project and transport infrastructure.
Study accuracy	<sup>+</sup> /.20 – 25%	Higher accuracy
Sale Product Grade	60.1% Fe	Higher grade
Sale Product Tonnes	2 Mtpa	
Waste to Ore Ratio (t:t)	1.4:1	Lower waste to ore ratio

### **3. THE PFS AS COMPARED TO THE 2011 PEA**

The results of the PEA were announced on November 21, 2011 (NI43-101 Technical Report released January 4, 2012) was premised on a potential 2 Mtpa direct shipping hematite operation to be exported through the Port. The PEA was based on an Indicated Mineral Resource of 8.6 Mt at 54.9% Fe and an Inferred Mineral Resource of 15.8 Mt at 55.3% Fe, above a 50% Fe cut-off. Subsequent to that announcement, the resource has been substantially increased.

This PFS has a different premise and involves the beneficiation of a total hematite Indicated Resource of 54.46 Mt at 47.21% Fe (above a 40% Fe cut off) to produce Beneficiated Iron Ore (“BIO”) suitable for sinter plant feed.

Comparison of the potential direct shipping ore (“DSO”) and beneficiation options demonstrates that beneficiation of the Ularring Hematite Project will:

- produce a commercially focused high grade sinter fines product less subject to grade and impurity pricing discount;
- maximise utilization of the Indicated Mineral Resource inventory, with the potential to expand the resources inventory through further conversion of Inferred to Indicated Mineral Resources and resource definition drilling of identified exploration targets;
- increase the mine life from five years (based on combined Indicated and Inferred Mineral Resources) to 13 years (based on Indicated Resources only) with further potential to increase mine life through Inferred Mineral Resource conversion to the Indicated Mineral Resource Category; and
- significantly improve the Ularring Hematite Project’s economic viability through reduced discount on sales price (due to lower impurity levels and higher Fe content) and the cost advantages associated with the lower waste-to-ore ratio and simpler mining operations by mining to a natural geological boundary (not requiring selective high grading in smaller pit operations as envisaged in the PEA).

### **4. RESOURCE BASE**

The PFS is based on the combined Indicated Mineral Resources of Snark, Drabble Downs, Central and Banjo being 54.46 Mt at 47.2% Fe, as detailed in Table 2 and Table 3 (news release dated June 14, 2012; NI43-101 Technical Report dated June 29, 2012) above a 40% Fe cut-off.

The Inferred Mineral Resource, also shown in Table 2, has been excluded from the PFS for the purpose of mine planning, life of project and financial evaluation.

**Table 2. Mineral Resources, Ularring Hematite Project. Fe>40%**

Category	Tonnes Mt	Fe %	P %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	LOI %	S %
Indicated	54.46	47.2	0.06	16.9	6.5	7.9	0.16
Inferred	25.99	45.4	0.06	20.6	6.0	7.2	0.09

*Note: The CSA Global Pty Ltd ("CSA") Mineral Resource was estimated within constraining wireframe solids encapsulating banded iron formation ("BIF") strata. The resource is quoted from blocks above 40 % Fe cut-off grade, except Moonshine where resource is quoted from blocks above 50 % Fe. Differences may occur due to rounding. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.*

**Table 3. Mineral Resources, by Deposit, Ularring Hematite Project. Fe>40%**

Deposit	Reporting cut-off grade (Fe%)	Category	Tonnes Mt	Fe %	P %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	LOI %	S %
Snark	40	Indicated	21.83	47.2	0.07	17.5	6.1	7.7	0.15
	40	Inferred	10.96	45.2	0.07	21.8	5.1	6.8	0.09
Drabble Downs	40	Indicated	11.07	47.2	0.06	16.6	6.4	8.3	0.26
	40	Inferred	0.36	43.6	0.05	24.0	4.8	7.8	0.09
Central	40	Indicated	15.09	47.0	0.05	16.2	7.2	8.1	0.12
	40	Inferred	10.19	45.3	0.05	20.3	6.3	7.5	0.08
Banjo	40	Indicated	6.47	47.8	0.06	16.7	6.6	7.4	0.14
	40	Inferred	3.88	45.4	0.06	18.7	7.6	7.9	0.09
Moonshine	50	Inferred	0.60	53.0	0.06	13.4	6.7	6.1	0.15

*Note: The CSA Mineral Resource was estimated within constraining wireframe solids encapsulating BIF strata. The resource is quoted from blocks above 40% Fe cut-off grade, except Moonshine where resource is quoted from blocks above 50 Fe %. Differences may occur due to rounding. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.*

The PEA was based upon an earlier Mineral Resource estimation and excluded the Moonshine hematite Inferred Mineral Resource. The economic analysis contained in the PFS is based on the combined Indicated Mineral Resources only and does not include Inferred Mineral Resources.

## **5. METALLURGY**

Macarthur completed the first phase of metallurgical test work in the last quarter of 2011 (news release dated November 21, 2011; NI43-101 Technical Report released January 4, 2012) and a second phase of test work in the second quarter of 2012 (news release dated June 1, 2012; NI43-101 Technical Report released June 29, 2012).

The results of these two phases of metallurgical test work suggested that product grading in excess of 60% Fe could be produced from a range of materials of differing Fe grade and mineralogical compositions.

Based on the findings of the phase one and phase two metallurgical test work programs, a conceptual process flow sheet was developed to accommodate changing feed material characteristics over time. A third phase of metallurgical test work based on 500 kilogram diamond core samples to validate the conceptual flow sheet and to produce detailed engineering design and economic performance parameters commenced in May 2012 and was completed in July 2012.

The third phase of test work investigated the metallurgical response of a composite sample with average grade of 50-52% Fe regarded as representative of the average plant feed at a nominal cut-off of 41% Fe from the Snark, Banjo and Central areas and a composite sample of low grade (less than 40% Fe) material that was regarded as representative of the material in the transition zone which was excluded from the resource inventory for the purpose of the PFS.

The latter stage of this phase 3 test work program was directed at optimising the proposed process flow sheet to improve both product grade and recovery by reducing process feed size to less than 2.5 mm and by introducing regrinding of gravity middlings, both with a view to improving liberation.

The findings indicate that gravity processing of the -2.5 mm +0.106 mm fraction followed by regrinding of gravity middlings to -0.0106 mm and magnetic separation of the combined -0.106 +0.025 mm size fraction produced a combined product grading 60% Fe at a mass recovery of 60% and a recovery of Fe to product of 70%.

**Table 4. Average Material Grades**

	Fe %	SiO <sup>2</sup> %	Al <sup>2</sup> O <sup>3</sup> %	P %	S %	Cl %	LOI %
Feed	52.35	11.86	4.16	0.056	0.161	0.061	7.88
Product	60.14	5.06	2.17	0.052	0.078	0.014	6.14

Similar test work was performed on the low grade composite sample. This material is derived from the transition zone between unweathered magnetite BIF and the nearer surface higher grade hematite/goethite product of magnetite oxidation and concentration. Quemscan results showed the composite’s mineral constituents were predominantly goethite and hematite with no mag-hematite and the major gangue constituents composed of kaolinite with lesser quartz. These results also indicated that only 60% of the Fe was present in liberated minerals. Heavy Liquid Separation by size fraction supported the finding of poor liberation and suggested a product grade limitation of gravity processing of this material to between 53% and 57%.

Test work confirmed that gravity and magnetic processing of this transition material was capable of yielding a product grading between 54% and 56% Fe at a recovery of Fe from feed to product of between 40% and 45%

**Table 5. Transitional Material Grades**

	Fe %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %
Feed Grade	39	28	7.5
Product Grade	54-56	7-12	2-3

Further metallurgical test work will be conducted on samples from the transition zone to evaluate opportunities for the exploitation of material of this type and its possible inclusion in the material inventory available for exploitation.

The final proposed process flow sheet based on the results of this last stage of test work is presented in the section ‘Processing’, below.

## 6. MINING

Two mining methods were evaluated for the Ularring Hematite Project, being conventional Excavate, Load and Haul (“ELH”) and Continuous Mining. The strength characteristics of the deposit and waste material are suitable for both mining methods, with minimal blasting required. Conventional ELH has been chosen based on both operational and cost factors. Contract mining has been assumed for both mining methods. Operating cost estimates were sourced from IQE Pty Ltd. Geotechnical and seismic studies have been undertaken by Peter O’Byrne and Associates and hydrogeology studies by Groundwater Resource Management Pty Ltd. The results of these studies were used in optimisation and pit design in the PFS.

Optimisation studies were conducted using Whittle software for the Indicated Mineral Resources to provide a basis for pit design. Process, infrastructure and revenue related input parameters were sourced from MSP.

Based on the optimisation results, pit designs have been developed for 14 separate pits at Snark and Drabble Downs; 9 pits at Central and 4 pits at Banjo. The pit designs recover 42.9 Mt averaging 47% Fe, including mine dilution of 5% grading 25% Fe, with an overall strip ratio of 1.4:1. The resources contained within these pit designs form the basis of the Mineral Reserve statement and were used in the financial modelling.

A mine production schedule, based on Indicated Mineral Resources within the pit designs and including 95% mine recovery and 5% mine dilution at 25% Fe, has been developed for the Ularring Hematite Project targeting annual production of 2 Mtpa concentrates (Table 6). Total annual material movement ranges between 6.8 Mtpa to 9.3 Mtpa. Higher strip ratios occur for the Central pits account for the higher material movement.

**Table 6. Mine Production Schedule**

Description		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Deposit		Snark/DD	Snark/Central	Central	Central	Central	Central/Banjo	Banjo						
Strip Ratio	tt	0.81	1.13	1.08	1.09	1.26	1.45	1.15	1.50	2.23	1.65	2.27	1.90	0.84
Ore Mining	kt	3897.6	3208.5	3303.3	3336.9	3028.5	3460.4	4344.4	3611.2	2737.7	3445.4	2668.9	3160.2	2748.4
	Fe	48.15	46.94	47.38	46.01	47.34	47.16	46.06	47.30	46.67	46.55	46.69	47.80	46.81
Waste Mining	kt	3168.6	3618.9	3575.8	3649.3	3804.2	5013.8	4976.9	5423.8	6112.8	5668.3	6062.7	5994.8	2309.7
Total Mining	kt	7066.1	6827.4	6879.0	6986.2	6832.7	8474.2	9321.3	9035.0	8850.5	9113.7	8731.5	9155.0	5058.1
Plant Feed	kt	3333.3	3333.3	3333.3	3333.3	3333.3	3333.3	3333.3	3333.3	3333.3	3333.3	3333.3	3333.3	2951.3
	Fe	48.15	47.12	47.35	46.16	47.20	47.16	46.11	47.00	46.78	46.60	46.67	47.68	46.87
	Al	5.45	6.47	6.33	5.71	5.11	7.39	7.27	7.48	7.75	7.35	7.49	7.33	5.55
	Si	15.60	14.53	14.77	17.64	17.50	14.14	15.51	13.70	13.62	14.97	14.73	13.75	18.10
	P	0.06	0.06	0.06	0.07	0.06	0.07	0.06	0.05	0.04	0.05	0.05	0.05	0.06
	S	0.24	0.30	0.25	0.14	0.18	0.16	0.15	0.18	0.19	0.14	0.12	0.18	0.10
	LOI	7.28	8.50	8.34	8.03	7.02	8.20	8.53	8.75	8.83	8.25	8.22	7.86	6.86
Ore S/P Closing Balance	kt	564.2	439.4	409.3	412.9	108.1	235.2	1246.2	1524.1	928.5	1040.5	376.1	202.9	0.0

In comparison, the PEA news release (dated November 21, 2011) and associated NI43-101 Technical report (dated January 4, 2012) considered contract conventional drill, blast, load and haul mining methods to produce 2 Mtpa fines potential DSO product. Both Indicated and Inferred Mineral Resources were included in the PEA with anticipated mineable pit tonnages totalling 10.5 Mt at 55.9% Fe, at a strip ratio of 2.8:1.

## 7. PROCESSING

The metallurgical test work programmes demonstrated that the Ularring Hematite Project deposits are amenable to beneficiation using conventional crushing, scrubbing, classification, gravity and magnetic separation followed by grinding and spiral separation of magnetic tailings to produce a +60% Fe product (typically -2.5mm) with mass yields in the order of 60%.

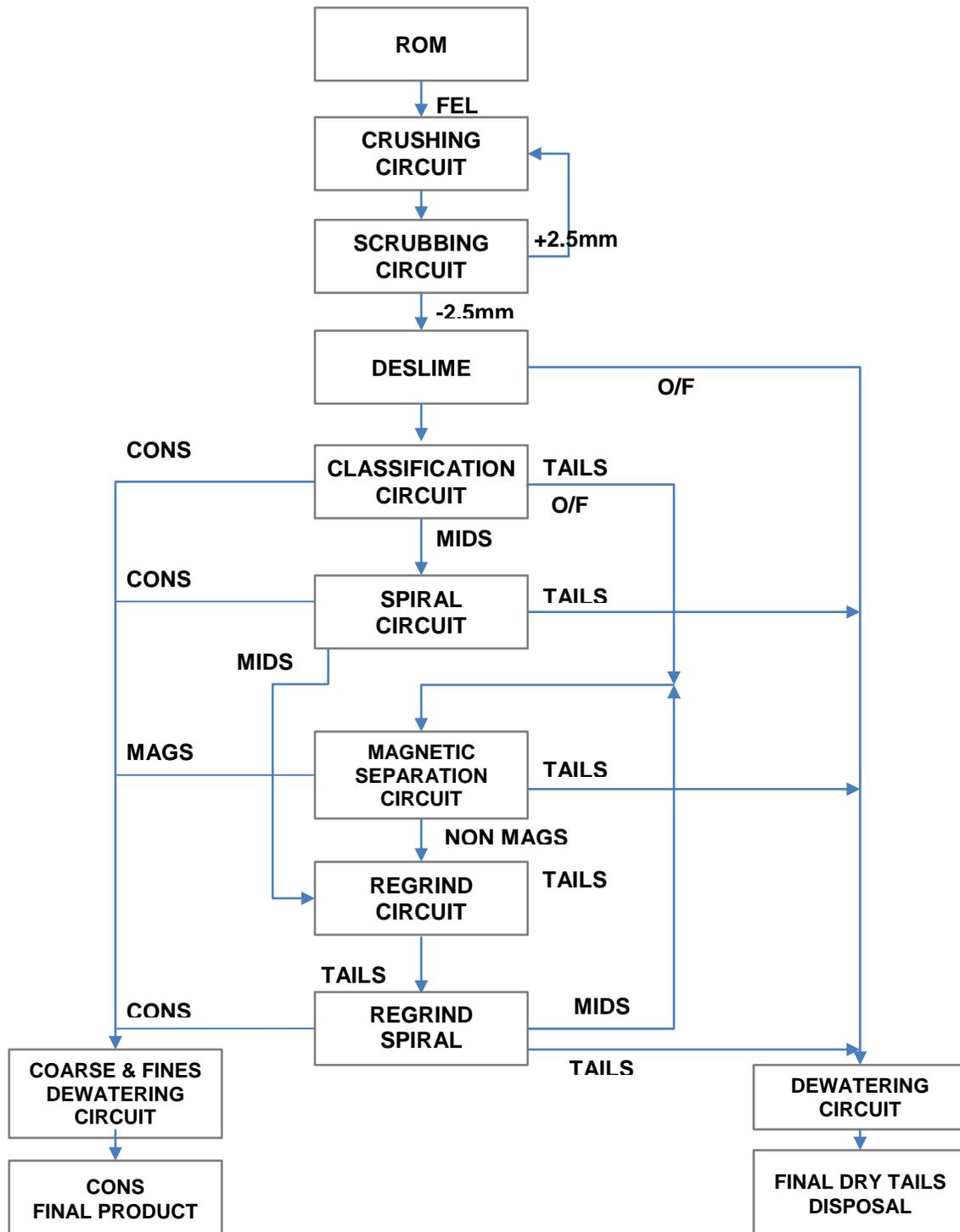
A summary of the proposed processing facility is as follows:

- Feed will be processed through the beneficiation plant at an annualised rate of between 3.3-3.5 Mtpa to produce 2 Mtpa of Fe concentrate for export.
- The plant will comprise a three stage crushing circuit integrated with a scrubber circuit to promote earliest liberation of fines to the beneficiation circuit in order to limit over-grinding. The crushing circuit will target a P80 of 2.5mm with fine crushing being performed by a high pressure grinding roll.
- -2.5mm material, resulting from the crushing circuit will be pulped and de-slimes at 35 micron ahead of the beneficiation plant.
- The beneficiation plant incorporates a primary hydraulic classification stage using Allminerals Allflux technology or similar which will produce a final concentrate product along with a middling fraction, which will be presented to a 3 stage spiral circuit which in turn will produce a final Fe concentrate stream and a fines overflow product.
- The middling fraction from the spiral circuit together with the +0.025mm fraction from the Allflux overflow will be processed through a magnetic separation stage comprising low intensity magnetic separation and wet high intensity magnetic separation circuit ("HIMS") to produce a magnetic Fe concentrate.
- The non-magnetic fractions from the magnetic circuit will then be presented to the regrind milling

circuit operating in closed circuit with regrind spirals to scalp fine Fe concentrates.

- All final Fe concentrate streams will report to a concentrate thickener prior to dewatering using ceramic disk filters to produce a -2.5mm concentrate at typically less than 8.0% moisture.
- Coarse tailings will be dewatered using conventional dewatering screens, whilst fines tailings from the beneficiation plant will report to the tails thickener for settling prior to filtrations to produce a dewatered final fine tailings material before being incorporated in the mining waste stockpiles.

The following schematic flow diagram provides an overview of the proposed processing facility.



## **8. INFRASTRUCTURE**

The Ularring Hematite Project will comprise a fully serviced remote area mining and processing hub that will be supported by a fly in fly out work force supplemented by Kalgoorlie located personnel.

As such, the project will incorporate the following key infrastructure requirements:

- dedicated on site power generation by a third party provider.
- remote bore field and on-site water treatment plant for water supply which could be provided by third party providers.
- remote area accommodation facility which could be provided by third party providers.
- remote area mine administration centre.
- dedicated communication network.
- a dedicated stockpile area at the rail siding which will be capable of stockpiling up to 60,000 tonnes at concentrates and loading 115+ tonne ore wagons.

The rail link will be operated and maintained by a third party.

## **9. LOGISTICS**

The hematite concentrates will be transported from the mine by road to the Menzies rail siding and then on to the Port for export. The route will bypass the town of Menzies and will be a total of 121.1kms in length (mining operation centre to siding).

Road haulage will be along the existing Evanston – Menzies Road utilising quad road trains with side tip trailers. The concentrates will be stockpiled adjacent to the rail siding in 2 x 30 Kt stockpiles before being rail transported with standard ore wagons to the Port followed by unloading by rotary car dumper, stockpiling in covered shed, reclaimed and loaded onto vessels via the No 3 berth ship loader.

## **10. PORT**

The Ularring Hematite Project is centrally located between a number of ports in Western Australia's South West. Previous analysis (in the November 2011 PEA) identified that the Port offered the best option with rail access, good vessel size capabilities, rail infrastructure and available present and /or future export capacity. At some 510kms from the Ularring Hematite Project, the Port is preferred.

With the completion of a A\$54 million Port upgrade project in February 2002, the Port became the deepest port in southern Australia, capable of handling Cape Class vessels up to 200,000 dead weight tonnes plus fully loaded Panamax class vessels up to 75,000 dead weight tonne. Currently the Port handles over 200 ships per annum and is presently licensed for 11.5 Mtpa of bulk iron ore loading.

The Port currently exports approximately 9 Mtpa of iron ore and in January 2012 the Western Australian Transport Minister, the Honourable Troy Buswell approved an in principle expansion of export capacity at the Port by up to an additional 20 Mtpa. This proposed expansion will follow the A\$120 million road rail transport corridor upgrade currently under development into the Port.

The preliminary construction timelines for the Multi User Iron Ore Facility have not been fully disclosed but initial estimates are that the Port expansion will be completed by 2015. Macarthur continues to work with the other companies in the Yilgarn Iron Ore region to impress upon the Western Australian Government the need for a timely expansion.

Macarthur has entered into a Capacity Reservation Deed with the Esperance Port Authority ("EPSL"), securing a commitment for a 2 Mtpa allocation as part of the proposed expansion of the iron ore export facilities at the Port.

In June 2012 the EPSL commenced a formal Market Sounding process to identify all parties interested in the capacity expansion exercise. Macarthur has registered an interest in the expansion of the Port in its own right and is also participating in a larger consortium group with a similar interest and has entered into a Market Sounding Participation Deed.

The expansion of available capacity at the Port remains the single most significant issue remaining to be

resolved for the commercialisation of the Ularring Hematite Project. While the Company is continuing to participate in and support this development, there are opportunities to pursue alternative strategies for access to port capacity or to use alternate logistics chains in the future.

## **11. MARKETING**

Macarthur engaged the services of an independent global iron ore consultant LFJ Consulting Pty Ltd (“LFJ”) to assist in determining the potential value, penalties and market opportunities of the beneficiated fines and to provide marketing input for the PFS. Amongst other things the study considered the relative pricing of a 62% product compared with the PFS product specification of 60% Fe product in order to provide the foundation for a cost benefit analysis to be carried out in due course for the production of a higher grade Fe product at a likely lower overall process recovery.

The shipped iron ore fines product from the Ularring Hematite Project is forecast to produce a 60% Fe content (Table 4) with the remaining chemistry within the acceptable range for steel plant consumption. Potential also exists to produce a 62% Fe product if required. The 60%Fe iron ore fines product is well suited for the Asian market and at a production capacity of 2Mtpa will be easily consumed by a small number of steel plants.

The relative Value in Use (“VIU”) of the 60% Fe iron ore fines compared to the Platts 62% Fe index was calculated using the Slag Volume Index (“SVI”) method. This index measures the amount of waste material required to be processed to obtain one tonne of iron. Using the SVI method it is forecast that the 60% Fe iron ore fines would attract a slight discount (1.5%) on a dmtu basis compared to the Platts 62% Fe index to provide the similar VIU based on the iron ore fines chemistry. Although the 60% Fe iron ores fines product size distribution is finer compared to typical seaborne hematite fines from Australia, the ultra-fines level (-0.15mm) component, which negatively impacts on sinter plant productivity, is lower compared with other hematite products from the Pilbara region. Therefore it is assumed that the size distribution will have no impact on sinter plant productivity. This assumption will be tested in due course by laboratory-scale sinter pot test work program at an internationally recognised laboratory. As at the date of the preparation of the LFJ report in May 2012, Macquarie Research forecasts the Platts 62% Fe index (CFR China) at US\$2.597/dmtu (US\$161/dmt) in 2014. Based on this information the value of the 60% Fe iron ore fines are estimated at US\$153/dmt (CFR China) with a long term pricing post 2016 estimated at US\$114/dmt (CFR China).

Due to the higher revenue of the 62% Fe product compared to the 60% Fe product, LFJ has recommended that consideration should be given to target the 62% Fe for the first three years of production and concurrently investigate mine life extension programs on a yearly basis with a forecasting three year rolling mine grade plan. This option will be evaluated as part of subsequent project studies.

## **12. ECONOMIC EVALUATION**

The evaluation of the Ularring Hematite Project was completed using discounted cash flow analysis with a real pre-tax discount rate of 8%, with a range of sensitivities applied. The key economic outcomes were:

- Life-of-Mine revenue over 13 years of greater than A\$3.238 billion;
- A NPV estimate of A\$456 million;
- Operating costs of A\$78/tonne of product delivered free on board (“FOB”) to the Port; and
- Capital discounted payback of approximately 3 years.

The financial outcomes from the studies of the Ularring Hematite Project are shown below.

**Table 7. Financial Outcomes**

<b>Financial Valuation</b>	
NPV at 8% discount rate*	A\$456 million
Internal Rate of Return*	57%
Capital discounted payback period	3 years
Project life	13 years

Fe grade of saleable product	60 %
Sales tonnes per annum	2 Mtpa
Total revenue generated (real)	A\$3.238 billion
Operating costs (excluding royalties) per tonnes shipped	A\$78 / t
Long Term Fe price (real, applied 2017 and beyond)**	US\$99 /t (FOB)
State royalties per tonnes shipped	\$6.28/t
Long term A\$/US\$ exchange rate (applied 2017 onwards)	0.84

\* Real, pre-tax

\*\* Benchmark 62% Platts Fe index discounted to the 60.1% product grade

### **13. OPERATING COSTS**

Operating costs have been estimated on the basis that mining operations will be carried out by a contractor under the Company's supervision for geology, grade control and survey, processing could be on a build, own operate basis by third party, concentrate transport to rail head and rail haulage to the wharf will be by contract, and port operations will be by EPSL. Average mine operating cost (excluding royalties) is estimated to be A\$78 per tonne to produce 60% Fe saleable product delivered FOB to Port. A summary of operating costs elements are shown below.

**Table 8. Operating Costs**

<b>Operating Costs</b>	<b>A\$m</b>	<b>A\$/t shipped FOB</b>
Mining	415	16.11
Processing	275	10.64
Product Transport (FOB)	1,200	46.58
Overheads	124	4.81
<b>Total Operating Costs</b>	<b>2,014</b>	<b>78.14</b>

### **14. CAPITAL COST ESTIMATE**

Capital costs for the Ularring Hematite Project over the life of the project including sustaining capital expense totalling A\$52.4 million incurred in years 2021, 2025 and 2027 were estimated by MSP and CSA. Sustaining capital consists of \$50.7 million for rehabilitation costs as mining areas are completed and the remainder includes replacement capital and ongoing mine road construction, particularly as operations move to Central and Banjo. The estimates are summarised below and should be considered to be ±20% order of accuracy current at the second quarter of 2012.

**Table 9. Capital Costs**

	<b>A\$m</b>
<b>Direct Costs</b>	
Mine (including mobilisation and technical services)	3.4
Processing plant	66.5
On-Site infrastructure	20.7
Off-Site infrastructure	17.4
Product transport and logistics	46.2
Construction facilities	4.0
General spares and services	3.0
<b>Subtotal Direct Costs</b>	<b>161.2</b>

Sustaining capital over LoM	52.4
Sub-total Direct Costs over LoM	213.6
<b>Other Costs</b>	
Engineering Procurement & Construction Management	16.5
Owner's costs	5.2
Contingency	27.4
<b>Sub-total Other Costs</b>	49.1
<b>Total Capital Costs</b>	262.7

Opportunities to reduce the Company's capital outlay through contracting with third parties to provide key elements of the project including potentially the beneficiation plant, project water supply infrastructure and site accommodation infrastructure will be evaluated in due course.

## **15. GOVERNMENT POLICY AND TAXATION**

### **Mineral Resources Rent Tax**

The Australian Government introduced the Mineral Resource Rent Tax ("MRRT") for coal and iron ore projects, effective from July 1, 2012. The impact of MRRT has been included in the Ularring Hematite Project's financial analysis. The total MRRT payable over the life of the Ularring Hematite Project is estimated at A\$12 million (real discounted).

### **Carbon Tax**

The Australian Government has recently enacted a "Clean Energy Legislation Package" which facilitates the implementation of a carbon pricing mechanism which includes a carbon tax commencing from July 1, 2012. The carbon tax will affect suppliers and companies that emit more than 25,000 tonnes of CO<sub>2</sub>-e emissions each year. The Company has not modelled the potential direct and indirect impact of the carbon tax in the Ularring Hematite Project's financial analysis at this stage.

## **16. APPROVALS AND ENVIRONMENT**

The Company has completed as much as currently possible of its environmental investigation for mining and processing supporting the Ularring Hematite Project. No declared rare flora listed under the *Wildlife Conservation Act* (1950) (WA) has been recorded in the project area. One species of threatened fauna, the Malleefowl, has been recorded but was predominantly found outside the disturbance area.

On June 1, 2012, the Company submitted its referral documentation under Section 38, Part IV of the *Environmental Protection Act 1986* (WA) for assessment by the Environmental Protection Authority. This referral will determine the level of impact assessment that is to be applied to the Ularring Hematite Project.

In June 2012, the Company also submitted a referral under the *Environmental Protection, Biodiversity & Conservation Act* (1999) (C'th) ("EPBC") to the Federal Government Department of Sustainability, Environment, Water, Population & Communities ("SEWPaC"). The Company received formal notification from SEWPaC on July 13, 2012 that the Ularring Hematite Project is not considered a controlled action and therefore does not require assessment under the EPBC.

The Company is now in the process of completing a mining proposal for submission to the Department of Mines and Petroleum for approval to mine under the *Mining Act* (1978) (WA). The Company's objective is to secure these mining approvals by January 2013.

## **17. MINERAL RESERVES ESTIMATE**

The Mineral Reserves determined from the results of this PFS are effective as at the date of this release and are estimated as:

**Table 10. Mineral Reserve Estimate**

Deposit	Classification	Tonnes Mt	Fe %	P %	SiO <sub>2</sub> %	Al <sub>2</sub> O <sub>3</sub> %	LOI%	S%
Snark/ Drabble Downs	Probable	26.24	47.0	0.06	15.4	6.4	8.1	0.20
Central	Probable	11.18	46.6	0.05	14.7	7.5	8.3	0.14
Banjo	Probable	5.53	47.5	0.06	15.7	6.4	7.4	0.15
<b>Total</b>	<b>Probable</b>	<b>42.95</b>	<b>47.0</b>	<b>0.06</b>	<b>15.2</b>	<b>6.7</b>	<b>8.1</b>	<b>0.18</b>

Mineral Reserve Estimates are based on the mineral resource model prepared by CSA, based on the following key assumptions and parameters:

- All Mineral Reserves are within tenements held by the Company.
- Mineral Reserves calculated at a cut-off grade of 41% Fe, consistent with metallurgical test work results.
- Mineral Reserve Estimates include 95% mine recovery and 5% mine dilution grading 25% Fe.
- Mass yield adopted for concentrate production from the Mineral Reserves is 60% consistent with metallurgical test work results.
- Project financial analysis has been based on May 2012 60% Fe concentrate price projections prepared by LFJ Consulting Pty Ltd. Prices range from US\$138.5 to US\$128.9 over the first three years and then adopt a long term average of US\$99.40 for the remainder of the project.
- Project financial analysis has assumed a Weighted Average Cost of Capital (“WACC”) of 8%pa and a US\$ AUD exchange rate of 0.93 for 2014, 0.89 for 2015 and 0.84 from 2016 onwards.
- Mining parameters and mining costs have been prepared by CSA.
- Metallurgical test work, process design and processing operating and capital costs have been prepared by MSP.
- Infrastructure design and costs have been prepared by MSP.
- Several water supply options have been identified in the PFS. This reserve is based on assumptions for the establishment and supply of water from within the tenements held by Macarthur Iron Ore Pty Ltd.
- Financial evaluation has been performed by Macarthur based upon a model designed by Thompson Group Holdings and reviewed by it.
- Environmental status and approvals have been provided by Macarthur.
- The Mineral Reserves constitute 70% of the total Indicated Mineral Resource.

## **18. PFS PARTICIPANTS**

Areas of responsibility in the preparation of this study:

- MSP covered all areas of study management, metallurgy, processing, port and logistics, infrastructure, marketing, estimates and risk.
- CSA covered geology, Mineral Resource estimates, mining and Mineral Reserve estimates.
- The Company provided financial analysis and environmental impacts and management, project approval, land access and native title.

## **19. QAQC**

Intersections reported have been verified by the Company’s QAQC protocols which are implemented in line with the standards set by NI43-101. All samples collected from drill holes were prepared by Ultra Trace and Amdel Laboratories in Perth, WA and pulverised to 90% passing 75 microns then analysed for the iron suite using XRF.

Given the level of analysis and investigation undertaken for this PFS level study we have not identified any significant legal, political, environmental or other risks that could affect the potential development of the resources. Non-material risks the Company has identified are set out in the Management Discussion and

Analysis that was filed on August 10, 2012. A NI43-101 Technical Report for the Ularring Hematite Project will be lodged with SEDAR within the required time.

Further information on Macarthur Minerals Limited and technical reports on the Ularring Hematite Project and the Moonshine Magnetite Project can be found on the company's website [www.macarthurminerals.com](http://www.macarthurminerals.com) or [www.sedar.com](http://www.sedar.com)

## **20. QUALIFIED PERSONS**

Mr David Williams, BSC (Hons) a member of the Australian Institute of Geoscientists, who is a full time employee of CSA Global Pty Ltd and is an independent Qualified Person, has reviewed and approved the above technical information relating to a Mineral Resource estimates contained in this release in the form and context in which it appears.

Mr Kent Bannister, Assoc Dip, Mining Engineering, ARMIT, a Fellow of the Australasian Institute of Mining and Metallurgy, who is a full-time employee of CSA Global Pty Ltd and is an independent Qualified Person, has reviewed and approved the above technical information relating to the mining, technical and financial review of the PFS.

Mr Damian Connelly, Chartered Professional Engineer (MET), a Fellow of the Australasian Institute of Mining and Metallurgy, who is a full-time employee of Mineral Engineering Technical Services Pty Ltd and is an independent Qualified Person, has reviewed and approved the above technical information relating to the metallurgical analysis, process design and associated operating and capital cost estimates of the PFS.

The Qualified Persons are satisfied that the processes used by Macarthur and external third party consultants are standard industry operating procedures and methodologies. They have verified the results from Macarthur and third party consultants and data disclosed in this release, including sampling, analytical, and test data underlying the information or opinions contained in the release.

## **21. CONTRIBUTORS**

In addition to CSA and MSP, the following companies provided input for the PFS.

### **LFJ Consulting**

LFJ Consulting Pty Ltd provides technical marketing services that provide the mine company options to maximise the NPV of projects by developing the appropriate cut-off grade for the resource base and providing the value in use of that shipped product at the steel plant.

### **Peter O'Bryan & Associates**

Peter O'Bryan has worked in mining geomechanics for over 30 years. In this field he has variously worked in research, for mining companies and as a consultant. His experience in geotechnical assessment of open pit mining extends from feasibility studies, through development, operation and abandonment.

### **Groundwater Resource Management Pty Ltd**

Groundwater Resource Management Pty Ltd ("GRM") is a Perth-based consultancy which specialises in providing high quality expertise in groundwater and water management services. GRM assist with management of water related issues by providing genuine solutions that are cost effective, practical and environmentally sound. See <http://www.g-r-m.com.au> for further details.

### **IQE Pty Ltd**

IQE Pty Ltd is a Western Australian based company whose three highly experienced Principal estimators provide estimating expertise to the Civil and Mining industries. IQE Pty Ltd performs a diverse range of services such as Feasibility Studies, Budgets, Project Estimations, Analysis, Productivity Studies, and Shadow Estimates. See <http://www.iqe.cc/> for further details.