

JUNE- 2015 QUARTERLY REPORT

ATHENA RESOURCES LIMITED

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CONTACTS

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PROJECTS

Byro:

Iron Ore, Nickel-Copper-PGE's

SECURITIES

173M Shares - AHN

SHAREHOLDERS

| | |
|--------------|--------|
| Mr E Edwards | 17.55% |
| Mr D Webster | 5.69% |

BYRO LOW IMPURITY MAGNETITE FIT FOR HIGH QUALITY PREMIUMS IN INDUSTRIAL MARKETS

- Very coarse grain, low impurity, high grade Byro magnetite well suited for offtakes in DMS Industry for platinum, tungsten and other heavy minerals.
- Fine to medium grain low impurity Byro magnetite suitable for offtakes for DMS Industry coal washing.
- Low impurity Byro Magnetite can be used as catalysts in the synthesis of ammonia and the filtration of arsenic from drinking water.
- High density concrete for specialist high weight construction

“The quality of the coarse grain Byro magnetite is too valuable to put into a steel furnace”

PREMIUMS ON COARSE GRAIN INDUSTRIAL MAGNETITE ALLOW FOR A

- Low volume mining model
- Low level capital

BYRO PROJECT (Athena Resources 100%)

Work completed in the June Quarter included data compilation, metallurgical test work review of the FE1 resource and preliminary suitability testing to a variety of industrial applications. Key to suitability was identifying industrial requirements compatible with the unique characteristics of the Byro premium magnetite.

Work included examining the requirements of the industrial magnetite marketplace in which the Company recognises the benefits of marketing its high grade premium magnetite product.

The majority of magnetite producers in Australia have large capital expenditure and high debt. This is common because the majority of production in Australia and globally is a fine grain product below 40µm destined for furnace feed and smelting. Processing costs for fine grinds drive operators to large volume requirements. The margin generated by the small volumes of premium product have an insignificant effect on the balance sheet of large producers with high capital expenditure and debt levels.

Athena has found continuous global supply of *high grade - coarse grain industrial magnetite* is unreliable due to the limited supply of a coarse grain product with a high level of purity. Irregularities of supply would improve if Athena focused its development on the combination of unique attributes found at Byro to supply this premium market.

The Company considers its current position of no debt and no supply commitments for its high quality resource opens a path to develop a purpose built, low volume operation. A purpose designed plant would allow the company to benefit from the current downward correction in operating costs, minimal debt servicing, and low capitalisation on the premiums generated in the industrial magnetite marketplace.

Data Compilation

The Company has previously completed extensive test work characterising the Byro metamorphic magnetite. Testing was completed in laboratories in Australia and in China which defined the major work indices required to develop bulk processing designs and costs. Emphasis on results was placed on producing a furnace feed product. Results from this work were announced on the ASX platform in July and August 2011. The full metallurgical characterisation at that time also highlighted other qualities and reassessment has been made this quarter with reference to industrial uses for the premium Byro magnetite.

The magnetite from Byro has unique characteristics because of its development within the ancient, deeply buried terrain of the north western Yilgarn Craton. This terrain produced the granulite grade metamorphic magnetite very different to the common banded iron formations commonly mined in the Pilbara. Data review has shown that the Byro Magnetite is a valuable fit for multiple industrial applications. This is because the Byro Magnetite's natural attribute of purity becomes significantly more useful to industry with increased grain size.

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FE1 Metallurgical Review - Key Attributes

Review of the physical and metallurgical characteristic of the Byro Magnetite.

- Observed crystal is granular
- Grain size up to 4mm (4,000 μm)
- Dissemination Granularity 95% between 0.2mm < 1.65mm (200 μm < 1,650 μm)
- Hardness on Mohs scale 6.5 with Vickers Hardness Number (VHN₁₀₀=681 - 792 kg/mm²)
- Specific gravity calculated at 5.18 g/cm³
- Uneven fracture parting on surface {111}
- Negligible cleavage planes within the crystal matrix.

FE1 Chemistry Review - Key Attributes

The concentrate chemistry key attributes are,

- Mineral composition of the ore is simple.
- No significant secondary alteration.
- K₂O, Na₂O, P, and S, all low and with P and S particularly low.
- Product is a high-quality concentrate of primary acidic magnetite.
- SiO₂, Al₂O₃, CaO, and MgO decrease as TFe increases.
- Magnetite represents the major iron-bearing mineral, while quartz represents the major gangue mineral.
- Tailings component of the ore is SiO₂, accounting for 80.99% of the total
- Product and tailings have no significant environment impacts.

Table 1. Chemical Components of the Ore (%)

| | | | | | | | | |
|------------|-------|-------------------|--------------------------------|------------------|------------------|--------------------------------|---------|-------------------------|
| Components | TFe | FeO | Fe ₂ O ₃ | SiO ₂ | TiO ₂ | Al ₂ O ₃ | CaO | MgO |
| Content | 37.52 | 18.28 | 33.33 | 41.49 | 0.11 | 1.41 | 1.55 | 2.38 |
| Components | MnO | Na ₂ O | K ₂ O | P | S | Loss in ignition | TFe/FeO | Coefficient of basicity |
| Content | 0.18 | 0.093 | 0.036 | 0.056 | 0.054 | 0.70 | 2.05 | 0.09 |

Table 2. Results of Chemical Phase of Iron in the Ore

| | | | | | | |
|---------------|-----------------|-----------------------------|-----------------|---------------|----------------|--------|
| Phase of iron | Fe in magnetite | Fe in hematite and limonite | Fe in carbonate | Fe in sulfide | Fe in Silicate | Total |
| Content | 34.62 | 0.81 | 0.17 | 0.03 | 1.89 | 37.52 |
| Proportion | 92.27 | 2.16 | 0.45 | 0.08 | 5.04 | 100.00 |

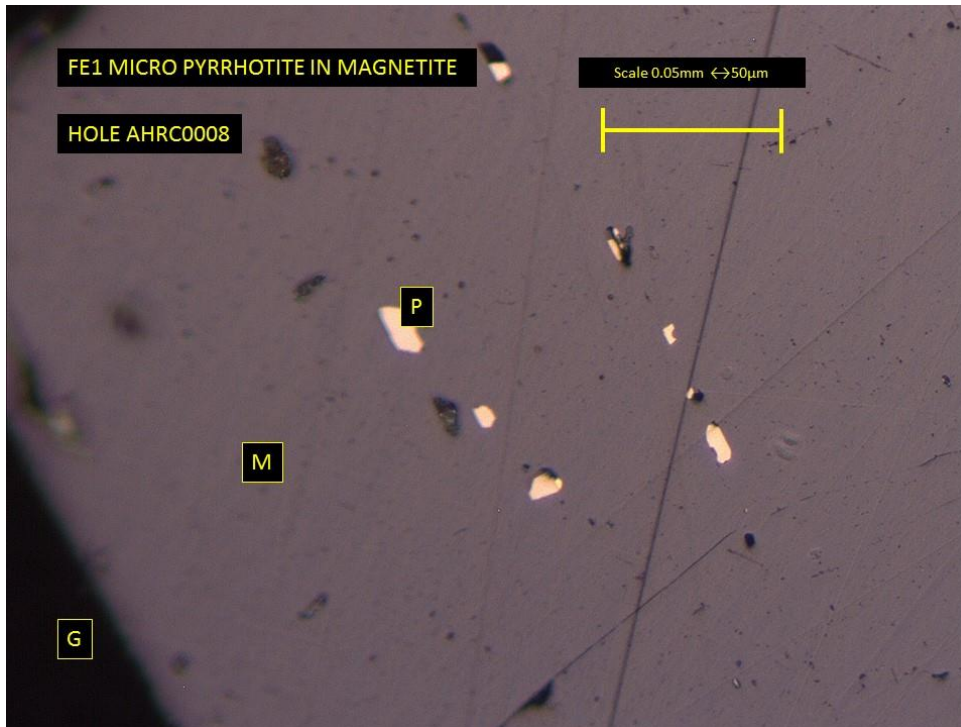
The major recoverable content in the ore is iron, at a grade of 37.52%; and 70% on concentration. Total iron over iron oxide ratio of the ore is 2.05, and the coefficient of basicity (CaO+MgO) / (SiO₂+Al₂O₃) equals 0.09. This is important for the ammonia production industry

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as low impurities and oxygen reduction is helpful for improved ammonia synthesis.

Minerals to be disposed by separation for iron enrichment on concentration include mainly SiO_2 , followed by Al_2O_3 , CaO , and MgO , altogether amounting 46.83% of the total weight. Contents of phosphorus and sulphur, which are the common hazardous contents, in like ores, are too low to cause any substantial influence on the quality of concentrate. Common Byro magnetite grains only microscopic impurities. The grain shown in Figure 1 displays a rare example of a $5\mu\text{m}$ (0.005mm) impurity within a $2,000\mu\text{m}$ (2mm) magnetite crystal.

Figure 1 Byro Metamorphic Magnetite Displaying Rare Impurity within the Crystal Grain.



M - LIGHT GREY = MAGNETITE, G - MEDIUM/DARK GERY = SILICATE GANGUE, P - LIGHT SPOTS = PYRRHOTITE IMPURITIESS. (PHOTMICRGRAPH BY Roger Townend and Associates –Consulting Mineralogists)

FE1 Grain Size and Granularity Review - Key Attributes

Magnetite at the FE1 Resource is distributed mostly as moderate to fine grains, $1.65\text{mm} > 0.30\text{mm}$ in size. More than 94% of the magnetite grains can be separated free under the milling fineness of -0.21mm , which is equivalent to 65% of the minerals under -200 mesh (expressed as “ $-200\text{mesh} / 45\%$ ”). Silicate and amphibole minerals occur along the fissure between and edges of the magnetite grains, and actual milling product can be appropriately coarser than the design test parameters.

Concentrate granularity key attributes are,

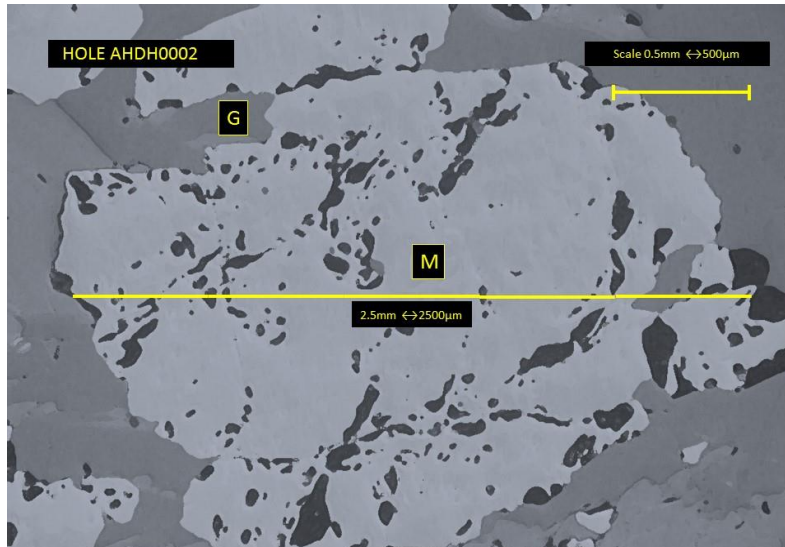
- Magnetite occurs mainly in disseminated to matrix form.
- Dissemination granularity size varies
- Grain size can be up to 4mm ($4,000\mu\text{m}$)
- Large product range
- 94% of the useful magnetite can be separated free at -200 mesh / 45%.
- Discrete silica at magnetite crystal edges allow clean early extraction.
- Care to be taken to avoid over grinding
- Concentrate productivity 47.9%,

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- Magnetite recovery 92.27%.

The image below is an example of a large grain tested at the Changsha Research Institute of Mining and Metallurgy in China

Figure 2. Photomicrograph of a 2.5mm magnetite grain from core from AHDH0002 at FE1



M - LIGHT GREY = MAGNETITE, G - MEDIUM/DARK GERY = SILICATE GANGUE, DARK SPOTS = SCRATCHES, JOINTS AND VOIDS. (Photomicrograph by Changsha Research Institute of Mining and Metallurgy–Consulting Mineralogists)

The most useful attributes of premium grading for industrial magnetite are purity and size. Dissemination granularity is a consequence of the physical characteristics of the metamorphic magnetite and is the start point for targeting a product size. Table 3 shows the granularity range for the Byro Magnetite is relatively large with the majority of grains in a wide spread of coarse fractions. The bulk group increasing at 0.3mm (300µm) up to 1.65mm (1,650 µm).

Table 3. Dissemination Granularity range of FE1 Magnetite

| Granularity (mm) | Distribution rate | Accumulative distribution rate |
|------------------|-------------------|--------------------------------|
| 2.3 > 1.65 | 8.31 | 8.31 |
| 1.65 > 1.17 | 20.77 | 29.08 |
| 1.17 > 0.83 | 18.69 | 47.77 |
| 0.83 > 0.59 | 15.58 | 63.35 |
| 0.59 > 0.42 | 12.98 | 76.33 |
| 0.42 > 0.30 | 10.65 | 86.98 |
| 0.30 > 0.21 | 7.46 | 94.44 |
| 0.21 > 0.15 | 2.92 | 97.36 |
| 0.15 > 0.105 | 1.65 | 99.01 |
| 0.105 > 0.074 | 0.61 | 99.62 |
| 0.074 > 0.052 | 0.2 | 99.82 |
| 0.052 > 0.037 | 0.12 | 99.94 |
| 0.037 > 0.026 | 0.05 | 99.99 |
| 0.026 > 0.019 | 0.01 | 100 |
| >0.019 | Trace amount | |

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The widespread granular distribution in the coarse range demonstrates usable volumes for grooming to suite multiple target sizes for multiple product applications.

There is also scope for improving the extraction of the grain size in the upper spectrum of the product range. The sharp contrast between the 2.3mm > 1.65mm at 8.31% and 1.65mm > 1.17mm @ 20.77% suggests it would be possible to over mill the product. A very coarse fraction, >2mm, can be removed post grinding and at first pass milling to prevent overgrinding. Upcoming test work will determine the productivity of an early mill product.

Byro Magnetite Work Indices Review

Determination of the Byro Magnetite Work Indices was completed at the same time as the granular classification in China. The Work Indices tests were repeated in Australia with near to identical results.

Work Indices already determined are

- Strong - Unconfined Compressive Strength (UCS) recorded values of 139.9 - 153.7 Mpa
- Bond Impact Crushing Work Index (CWi) recorded average value of 15.5 kWh/t
- Bond Ball Mill Work Index recorded a value of 16.5 kWh/t (test aperture of 106 micron).
- Bond Rod Mill Work Index recorded a value of 8.3 kWh/t.
- Bond Abrasion Index recorded a value of 0.3894

Athena is now looking at the costs and practical steps towards development of a low volume processing plant with additional classification and clean-up modules for industry specific requirements. This will be based on 2015 pricing and the favourable material work indices already determined.

Industrial Magnetite Markets and Capacity for Increased Demand

The industrial magnetite product at Byro is suitable for a large range of industrial uses. The company has been in discussion with several industries and specific product users. Market gaps identified by Athena include common use areas as well specialist industries where coarse grain size and or purity are in high demand.

- **Dense Media Separation – Ragging**

An extraordinary premium is paid for Dense Media Separation, (DMS), material with high specific gravity above 5g/cm³, where size requirements range from 150µm to 4,000µm (0.15mm < 4.0mm). This grade of magnetite is used for recovery of heavy metals and is called ragging. It is used in recovery of materials such as platinum, tungsten and also high density gemstones such as diamonds. Athena has identified, to date, a potential market shortfall of up to 20,000 tpa for very coarse media ragging with good premiums in consumption for finer grades as well. The company expects the requirement of coarser grade could be greater once the product is available. Research in this field is ongoing.

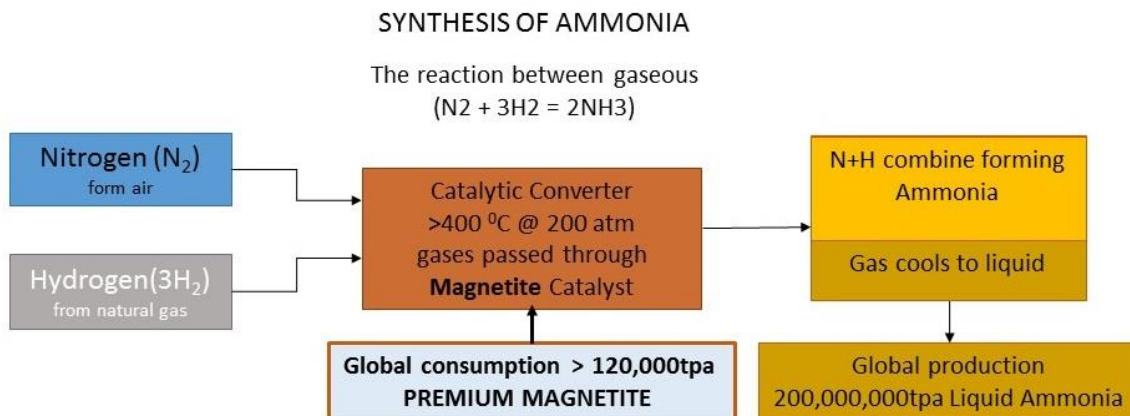
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- **Dense Media Separation – Coal Washing**

A common and higher volume application for magnetite outside steel manufacture is in the coal industry where dense-media washing, a suspension of sized magnetite in water, separates impurities such as environmentally harmful sulphides. The application and demand for coal washing technologies is increasing with pressure from global environmental awareness and government policies. Magnetite used for coal washing is of overall high purity and ranges in size from 50µm to 150µm, (0.05mm to 0.15mm), well suited to Byro magnetite. The current consumption for this purpose in Australia is between 200,000 < 300,000 tpa. There is a 100,000 tpa space in this market for a competitive low cost, coarse grain high purity product.

- **Catalyst in Ammonia Production**

A premium is paid for magnetite used in the synthesis of ammonia which relies on a particularly contaminant free product with maximum surface area for nitrogen absorption. Magnetite is the most economic reagent used as a catalyst in ammonia production in over 400 production plants around the globe which collectively produce 200,000,000 liquid tonnes of ammonia a year.



Ammonia production increases in proportion to global food demand and is directly linked to population growth. Current annual consumption of magnetite in the global ammonia industry is estimated to be 100,000 tpa based on a magnetite requirement of one tonne of catalyst per 2000 tonnes of liquid ammonia produced. Ammonia production capacity is expected to rise from current 200M tpa to 250M tpa by 2018, according to Department of Primary Industries and research data and RnR Market Research. There is a 25,000tpa space through growth in this market for a competitive low cost, coarse grain, high purity product. On the basis of purity, grade and cost there is also a potential share in current markets.

- **Liquid Hydrocarbon Fuel Production from Coal and Natural Gas**

Liquid fuel production is a similar technology in principal to ammonia, using a magnetite iron catalyst but focused on producing a synthetic hydrogen fuel from either natural gas or gasified coal. Production of this hydrocarbon fuel utilizes high pressure, high temperature reactors which operate upon a blend of micronized coal, a magnetite catalyst, and steam. The temperature of the reactor is raised to a level to efficiently convert the coal and steam into hydrogen and carbon monoxide then combining to form hydrocarbons. This is a growing industry and a relief valve for future liquid fuel supply. Supply growth of 25,000tpa of magnetite consumption into global synthetic fuel production is similar in volume to the ammonia industry at present and it is expected to increase in proportion to the perceived depletion of liquid fossil fuel stock.

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- **Industrial abrasives, sand blasting and ablation**

A moderate premium non silicate - low toxicity and reclaimable abrasive for industrial ablation. This includes sand blasting as well as emery sand paper manufacture. In both cases premiums are paid for the product sizes. Athena has identified a 30,000 tpa shortfall from suppliers in the Southern Hemisphere.

- **Aggregate in high-density concrete.**

Magnetite is used as an aggregate in concrete to increase density for applications such as counterweights, high density material such as underwater pipelines. It is also used as an additive in concrete as a thermal and chemical stabiliser for specialist construction materials.

- **Magnetite is also used as**

- Toner in electrophotography,
- Micronutrient in fertilizers,
- Pigment in paints
- Waste water management
- Absorbent to remove arsenic from drinking water

Work this quarter indicates that Athena Resources could undertake and benefit from a relatively low volume mining operation requiring relatively low levels of capital. The major benefits being higher revenue from a primary premium product supplying a more stable industrial market while also providing a high grade, fine grain, byproduct to the steel industry.

The company is currently considering mining development and processing options that will form the framework towards low volume production and supply of premium quality industrial magnetite products.

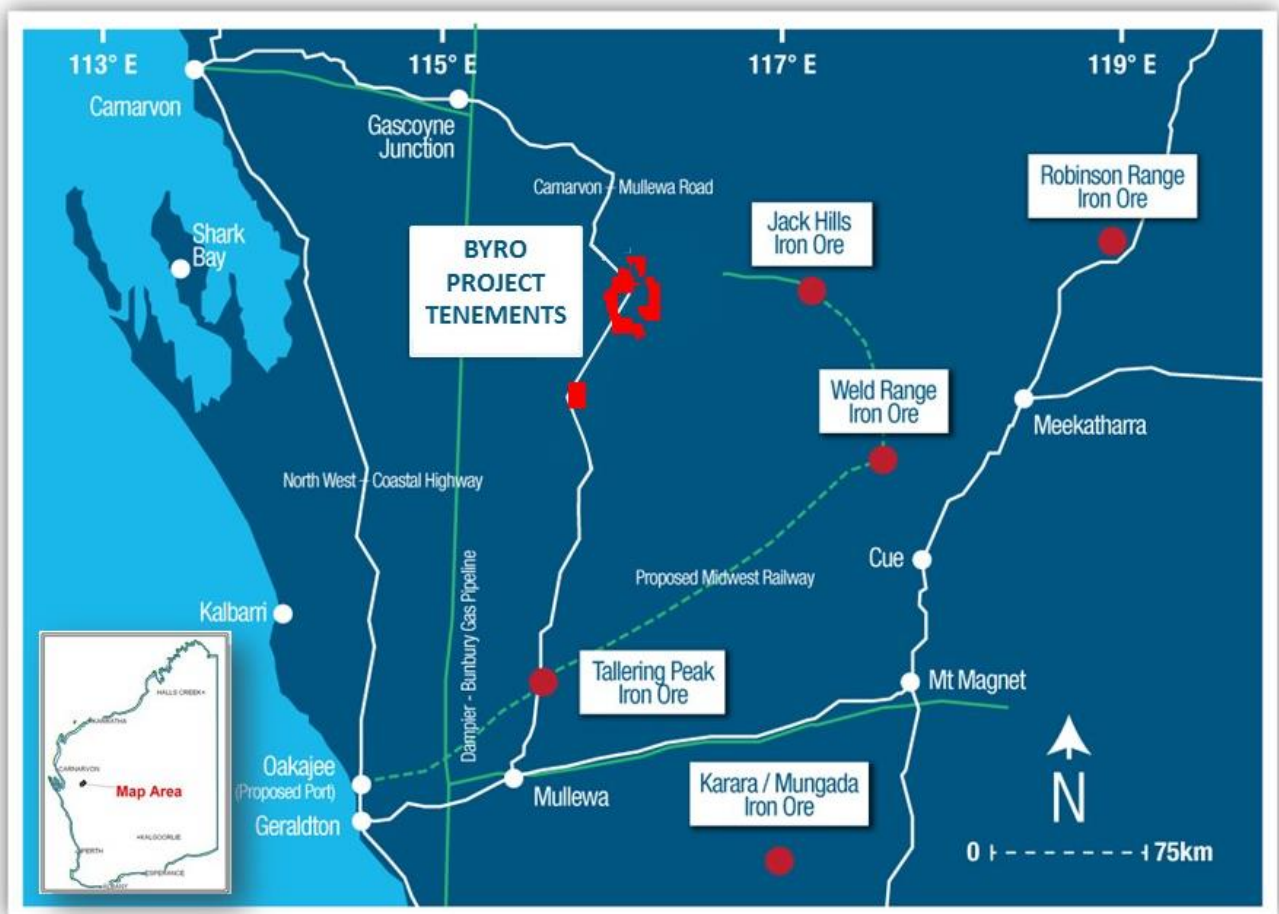
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About Athena Resources Limited.

Athena Resources Limited (ASX:AHN), which is based in Perth was listed on the ASX in 2006 and currently has 173 million shares on issue. Athena owns a 100% interest in the Byro Project through its subsidiaries Complex Exploration and Byro Exploration where it is exploring for iron ore copper, nickel and PGE's.

The Byro Iron Ore Project is strategically located in the Midwest which includes a substantial mining sector. The projects southern boundary is 210km north of the Mullewa Rail Siding by road and 310km from the Port of Geraldton. Access and improved infrastructure to the maturing iron ore province is growing with development of the CSIRO SKA Project and increased capacity and further development at the Port of Geraldton.

Figure 5 Regional Project Location



Yours faithfully

Ed Edwards
Managing Director
ATHENA RESOURCES LIMITED

31 July 2015

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JORC Compliance

No new sampling or data was acquired in this quarter or released in this document that is required to be disclosed in compliance with the

JORC Code, 2012 Edition Section 1 Sampling Techniques and Data

No new sampling or data was acquired in this quarter or released in this document that is required to be disclosed in compliance with the

JORC Code, 2012 Edition Section 2 Reporting of Exploration Results

No new sampling or data was acquired in this quarter or released in this document that is required to be disclosed in compliance with the

JORC Code, 2012 Edition Section 3 Estimation and Reporting of Mineral Resources

| INTEREST IN MINING TENEMENTS | |
|--------------------------------------|-------------------------|
| Athena Resources Limited 100% | |
| Byro | |
| E09/1507 | E – Exploration License |
| E09/1552 | |
| E09/1637 | |
| E09/1781 | |
| E09/1938 | |

Cautionary Notes

Forward Looking Statements

This announcement contains certain statements that may constitute “forward looking statements”. Such statements are only predictions and are subject to inherent risks and uncertainties, which could cause actual values, results, performance achievements to differ materially from those expressed, implied or projected in any forward looking statements.

JORC Code Compliance Statement

Some of the information contained in this announcement is historic data that have not been updated to comply with the 2012 JORC Code. The information referred to in the announcement was prepared and first disclosed under the JORC Code 2004 edition. It has not been updated since to comply with the JORC Code 2012 edition on the basis that the information has not materially changed since it was last reported.

Competent Persons Statement

The information included in the announcement was compiled by Mr Liam Kelly, an employee of Athena Resources Limited. Mr Kelly is a Member of the Australasian Institute of Mining and Metallurgy, and has sufficient relevant experience in the styles of mineralisation and deposit styles under consideration to qualify as a Competent Person as defined in “The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code 2012 Edition)”. Mr Kelly consents to the inclusion of the information in the announcement in the context and format in which it appears and that the historical information was compliant with the relevant JORC Code, 2004 Edition, and new information announced in this report is compliant with the JORC Code 2012 Edition.

Competent Persons Disclosure

Mr Kelly is an employee of Athena Resources and currently holds securities in the company.