

asx announcement

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Athena advances premium iron strategy with direct reduction testing

Byro's Exceptional 70.55% Fe Magnetite Concentrate Sample Enters Direct Reduced Iron Testing

Athena Resources Limited (ASX: AHN) ("Athena" or "the Company") is pleased to announce the commencement of a Direct Reduced Iron (DRI) testing program on high-grade magnetite concentrate from its flagship Byro Magnetite Project in Western Australia.

Highlights

- Byro magnetite concentrate (70.55% Fe) selected for DRI testing with specialist European DRI testing company
- Testing program evaluates the potential to further upgrade the concentrate using hydrogen-based DRI technology
- Initial test results expected late September 2025
- DRI technology represents low -emission steel production pathway using hydrogen instead of coking coal

Athena's Managing Director & CEO, Mr Peter Jones, commented:

"This DRI testing program represents an important validation of Byro's exceptional magnetite quality. With demonstrated concentrate sample grades exceeding 70% Fe and low impurities, Byro is entering the next phase of the process to assess whether its concentrate sample can meet the stringent requirements of emerging green steel technologies."

Direct Reduced Iron

Direct Reduced Iron (DRI) is produced through the direct reduction of iron ore using reducing gases at temperatures below iron's melting point. Unlike traditional blast furnace operations that use coking coal and produce significant CO₂ emissions, hydrogen-based DRI processes produce only water and iron, representing a zero-emission pathway for steel production.

DRI requires high-quality iron ore feed with a minimum Fe content of 67% and low impurities. The global DRI market is experiencing strong growth, driven by decarbonization initiatives in the steel industry.

Current Testing Program

The current testing program utilises hydrogen to refine iron ore concentrate, and if successful, is targeted to seek production of ultra-pure iron products with a Fe content exceeding 90% (although no forecast is made of whether this will be achieved). The program will also include testing and evaluation of the pelletisation characteristics of the Byro magnetite concentrate under hydrogen-based DRI conditions, aiming to provide technical validation of whether the material is suitability for green steel applications.

Testing Program

The DRI testing program will evaluate key performance characteristics of Byro magnetite concentrate:

Pelletisation Testing:

- Pellet formation and strength
- Fired pellet quality assessment
- Thermal shock resistance evaluation

Reduction Performance:

- Hydrogen-based reduction efficiency
- Iron recovery rates
- Final product Fe content and purity
- Residual impurity levels

Product Quality

Assessment:

- Metallisation degree evaluation
- Physical and chemical analysis
- Suitability for electric arc furnace (EAF) steelmaking

The comprehensive testing program is designed to aim to validate Byro concentrate's technical specifications for DRI applications and provide performance data for potential customers and partners in the green steel value chain.

Premium Applications Strategy

Beyond DRI applications, Athena is evaluating Byro's high-grade magnetite concentrate for multiple premium market segments where quality specifications command significant premiums over commodity iron ore pricing.

Application aspirations include:

- **Advanced Manufacturing:** Specialised steels for automotive, aerospace, and precision manufacturing applications
- **Energy Storage:** Iron-air batteries and grid-scale storage technologies requiring high-purity iron compounds
- **Industrial Processing:** Dense media separation, water treatment, and catalyst applications leveraging magnetite's unique properties
- **Medical Technology:** Ultra-pure iron compounds for medical imaging, pharmaceuticals, and biocompatible materials

Athena's premium strategy leveraging strengths:

- Resource quality delivering high-grade concentrate from recent testing results
- Strategic location within Western Australia's emerging industrial corridor
- Technical validation through from metallurgical testing programs to date
- Market timing, aims to capture growing demand for specialty iron products

Please note that the above comments comprise aspirational statements and are not intended to be forecasts, as the Company does not yet have reasonable grounds to expect that those matters will be achieved.

This announcement has been authorised for release by the Board of Athena Resources Limited.

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About Athena Resources Limited

Athena Resources (ASX: AHN) is developing premium magnetite solutions for advanced manufacturing and specialty steel markets. The Company's flagship Byro Magnetite Project in Western Australia has produced a 10kg product sample of exceptional 70%+ Fe concentrate. Through technical excellence and strategic market positioning, Athena is seeking to build a resilient, multi-industry minerals business focused on quality and innovation.

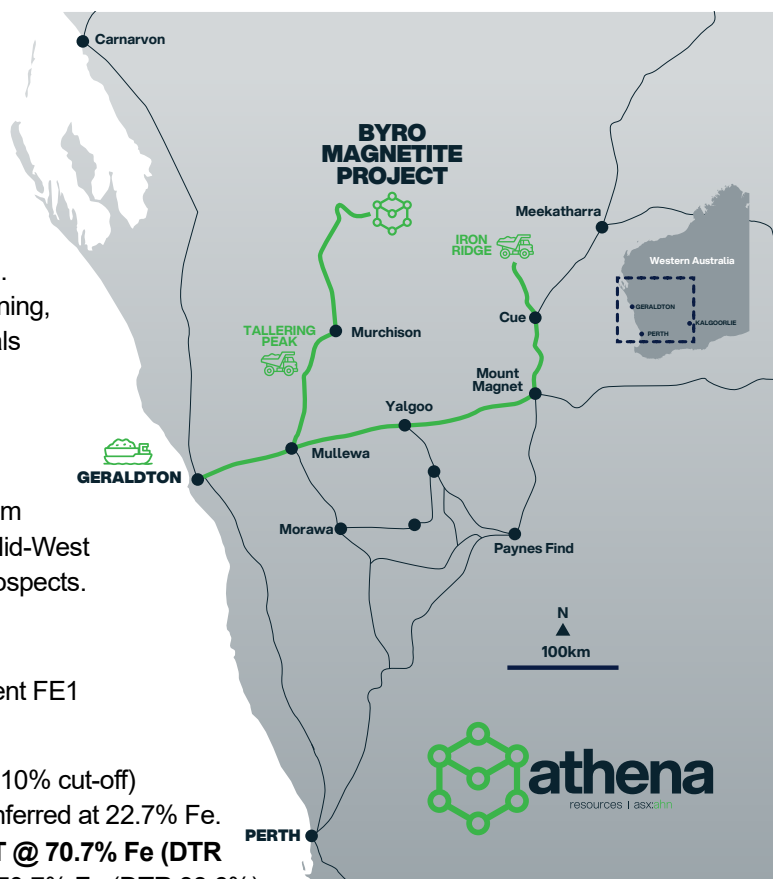
BYRO MAGNETITE PROJECT

The Byro Magnetite Project is located approximately 340km northeast of the Port of Geraldton in Western Australia's Mid-West region. The project comprises the FE1 and Byro South prospects.

Current Mineral Resource:

The samples produced for testing are taken from the current FE1 mineralisation, as follows:

- Whole Rock Mineral Resource: 29.3Mt @ 24.7% Fe (10% cut-off) comprising 24.0Mt indicated at 25.1% Fe and 5.3Mt inferred at 22.7% Fe.
- **Concentrated Magnetite Mineral Resource of 21MT @ 70.7% Fe (DTR 33.4%, 20% cut-off)** comprising 17.7 Mt indicated at 70.7% Fe (DTR 33.6%) and 3.3 Mt inferred at 70.8% Fe (DTR 32.3 %) refer ASX announcement 17 January 2023



The information in this announcement that relates to the Mineral Resource Estimate has been extracted from the Company's ASX announcement titled 'MRE – upgraded JORC classification and increased tonnes' released on 17/01/2023 and which is available at www.asx.com.au. The competent person for the Mineral Resource Estimate in that announcement was Alan Miller. The Company confirms it is not aware of any new information or data that materially affects the Mineral Resource Estimate information set out in the original announcement and confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the announcement. The Company confirms that all material assumptions and technical parameters underpinning the Mineral Resource Estimate in the original market announcement continue to apply and have not materially changed.

Metallurgical Results:

The information in this announcement that relates to metallurgical results has been extracted from the Company's ASX announcement titled 'ATHENA CONFIRMS BYRO PRODUCES ULTRA HIGH-QUALITY IRON ORE CONCENTRATE PRODUCT GRADING 70.55% IRON' released on 22/8/2025 and which is available at www.asx.com.au. The competent person for the metallurgical results in that announcement was Terence Weston. The Company confirms it is not aware of any new information or data that materially affects the metallurgical results information set out in the original announcement and confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the announcement.

Forward Looking Statements:

This announcement may include forward-looking statements. When used in this document, the words such as "could," "plan," "estimate," "expect," "intend," "may," "potential," "should," and similar expressions may be forward-looking statements. Although Athena Resources Ltd (ASX: "AHN") believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties, and no assurance can be given that actual results will be consistent with these forward-looking statements.