



Investor Presentation – June 2023

# HIGH PURITY MAGNETITE RESOURCE MATCHING WORLDS BEST



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## Located in Australia's Iron Ore Jurisdiction

- Byro Iron Ore is within the Mid-West of Western Australia, a province well known for its endowment of iron resources.
- The project spans in excess of 400km and consists of five granted Exploration Licences and two granted Mining Leases.



## Opportunity to feed green steel market

- Byro's superior Iron content (72% Fe) is higher than premium Iron Ore benchmarks (62-65% Fe) & provides opportunity for green steel.
- Byro's Fe concentrate grades are equaled by few mines in the world and among the highest purity reported in Australia.



## Mineral Resource with high grade concentrate

- 29.3Mt Whole Rock Mineral Resource with 24.0Mt Indicated category.
- 21.0Mt Concentrate Mineral Resource with Fe **70.7%**
- Very low impurities
- >\$10M spent on drilling, metallurgy, and geophysical targeting
- (MRE ASX Announcement 17<sup>th</sup> Jan 2023.)



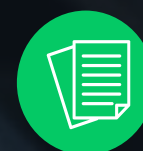
## Low Capex/Opex with access to infrastructure

- Low Capex to produce high quality product, compared to current Magnetite producers in WA.
- Located on RAV10 Main Roads approved haulage route direct to Geraldton Port
- Close to gas pipeline and local water supply



## Native Title Agreement. Advanced Environmental Studies

- Flora, Fauna, Climate data collection completed as part of the Level 1 and Level 2 Terrestrial Fauna Surveys.
- Range condition monitoring stations established for mine closure assessment.
- Successful completion of mining agreements with the Wajarri Yamaji Aboriginal Corporation RNTBC



## Pre-Feasibility Study progressed

- Entech Mining Consultants completed Geotechnical assessment and progressing with optimized open pit designs..
- GR Engineering reviewing Capex/Opex and processing requirements.



## Board and Management

Edmond Edwards **Managing Director**

Peter Newcomb **Executive Director**

Hau Wan Wai **Director**

## Major Shareholders



## Capital Structure

ASX: AHN

ACN 113 758 900

**1,070M**

Shares on issue

**3.21M**

Market Cap  
(1/6/23)

**582M**

Listed Options

**75M**

Unlisted Options

**\$0.003**

Share Price  
(1/6/23)



# Byro Iron Ore Project

- Located within Western Australia's Mid West Province, a world class iron ore jurisdiction.
- Situated 310km north of the Mullewa Rail Siding and 410km from the Port of Geraldton.
- Neighbouring iron ore mining and exploration projects include:
  - Jack Hills
  - Iron Ridge
  - Talling Peak
  - Koolanooka
  - Karara
  - Extension Hill







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# Geology and Mineralisation

- Byro Iron Ore Project is within the Narryer Terrane, along the north-western margin of the Yilgarn Craton
- High grade metamorphic terrane is host to gneisses, migmatites, and extensive layered mafic/ultramafic intrusive complexes.
- Recent exploration has revealed these intrusive complexes to be more extensive than previously realised. Magnetite units are orthomagmatic and are associated with mafic intrusions.
- High grade metamorphism has deformed and recrystallised these units resulting in a coarse grained, grind friendly, magnetite with exceptionally low levels of impurities.







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# Byro Magnetite

## High Grade Low-Cost Ore

### Super Purity

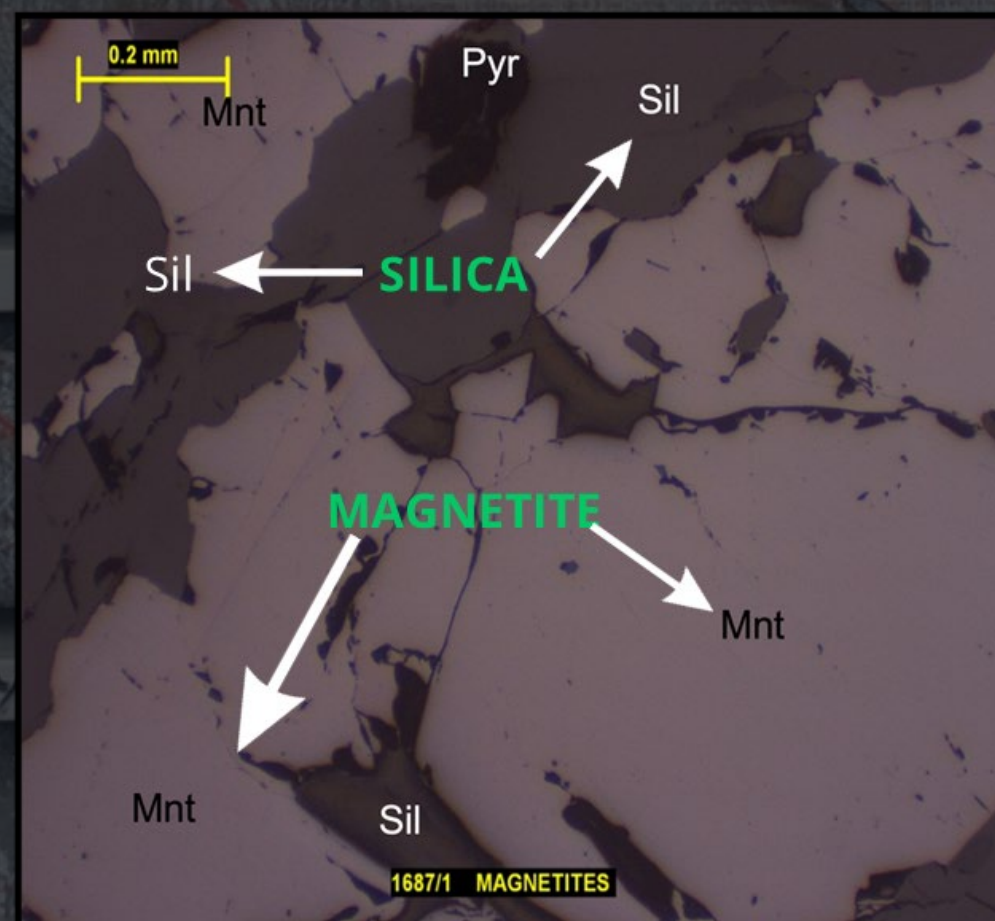
Absence of any impurities within each coarse grain

### Coarse Grain Size

The grain in the adjacent photomicrograph is over 1mm in size

### Grain Boundary

Dominantly silica



Photomicrograph of BYRO Magnetite  
GRAIN in Polished Section from  
Reflective Light



HQ diameter drill core



# Athena's Magnetite Resource

## The Right Mix

- ✓ Very low impurities
- ✓ Liberated with coarse grind size
- ✓ Significantly lower plant capital and operating cost with improved materials handling
- ✓ Superior concentrate grade
- ✓ 29.3Mt MRE, including 24.9Mt in Indicated category



Magnetite Ore of  
**HIGH PURITY (70.0 – 71.5% Fe)**  
and  
**SUPER PURITY (>72% Fe)**

Grind Size	Magnetite Concentrate	Fe Grade in Concentrate	Fe Recovery	Mass Recovery
P80 250µm	94.8% Fe <sub>3</sub> O <sub>4</sub>	68.6% Fe	94.10%	49.40%
P80 150µm	97.9% Fe <sub>3</sub> O <sub>4</sub>	70.8% Fe	93.70%	47.40%
P80 125µm	98.5% Fe <sub>3</sub> O <sub>4</sub>	71.3% Fe	93.10%	46.50%
P80 75µm HP	99.1% Fe <sub>3</sub> O <sub>4</sub>	71.7% Fe	92.93%	46.16%
P80 40µm SP	99.6% Fe <sub>3</sub> O <sub>4</sub>	72.06% Fe	92.6%	45.89%



# Major Results from Beneficiation Test Work



Unconfined Compressive Strength (UCS) recorded values of 139.9 and 153.7 Mpa and recorded a strength classification of strong.



Bond Impact Crushing Work Index (CWI) recorded average value of 15.5 kWh/t with a maximum value of 21.5 kWh/t and a minimum value of 8.2 kWh/t. (Appendix 1 - CWI)



Apparent Relative Density of 3.5 g/cc, recorded values of 3.52, 3.53 and 3.56 g/cc for ore and 3.5 g/cc concentrate.



Bond Ball Mill Work Index recorded a value of 16.5 kWh/t from a test aperture of 106 micron.

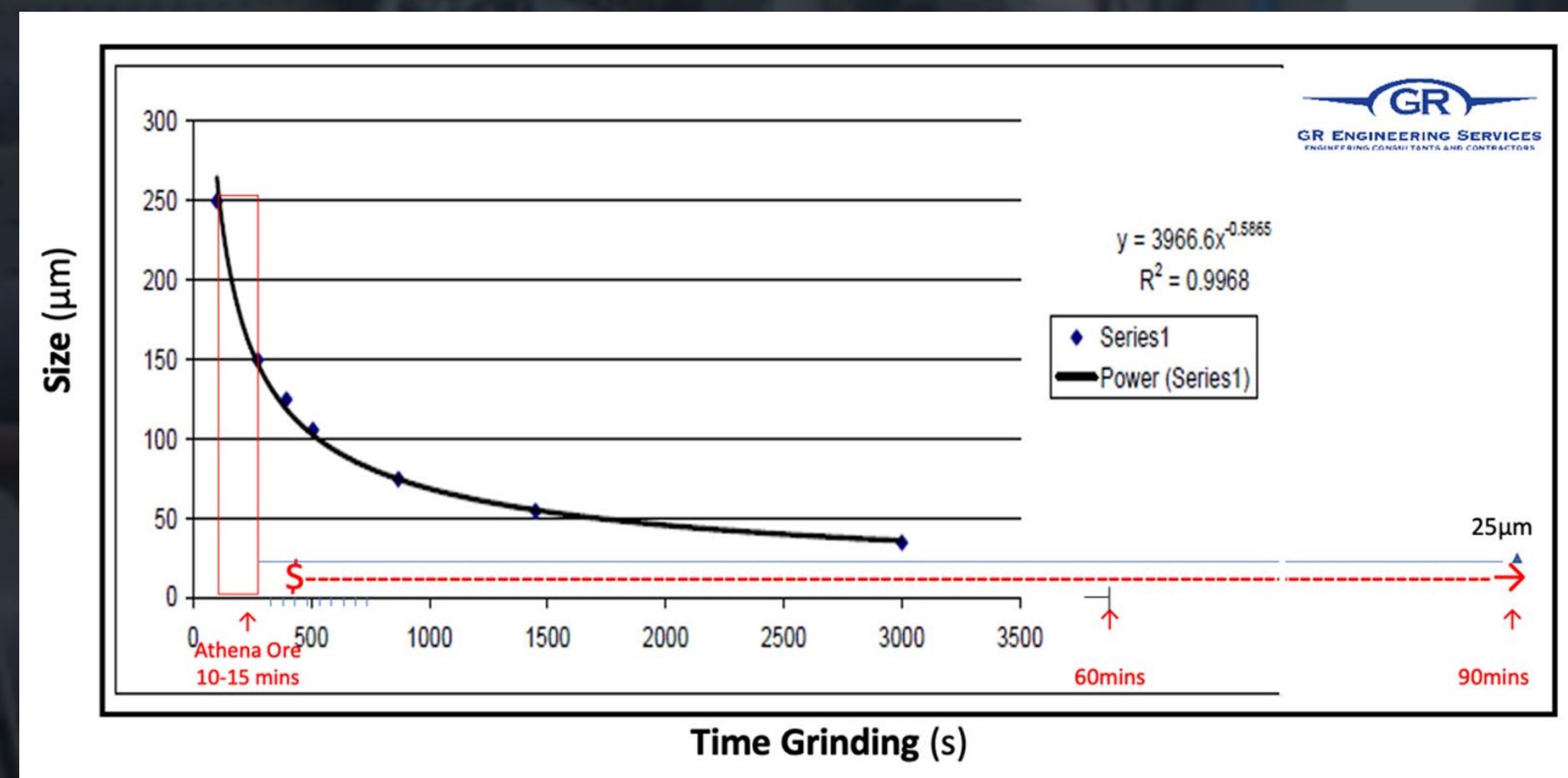


Bond Abrasion Index recorded a value of 0.3894.



Low energy processing requirement.

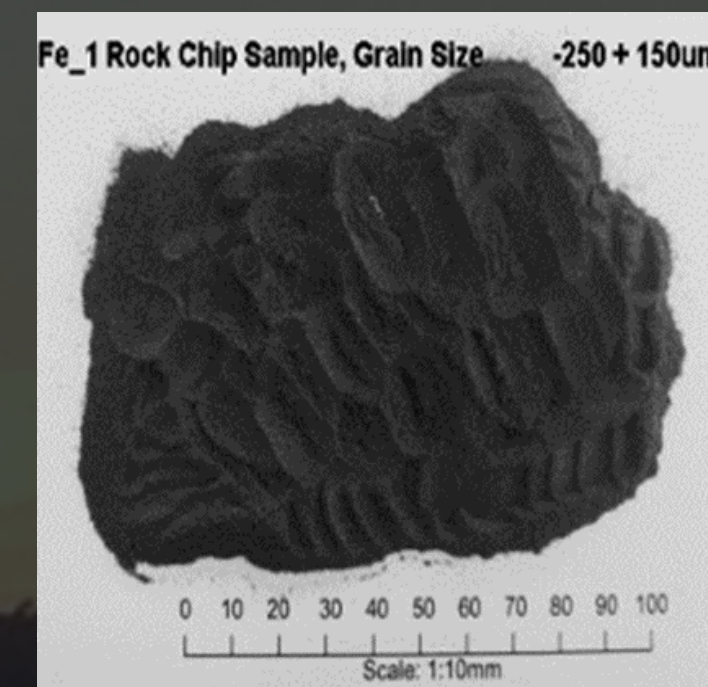
## Grind time vs Particle size





# Validated High Quality Nature of Project

- ✓ **ALS Ammtect Metallurgy** (Specialist Iron Ore Laboratories – Perth)  
Physical and Magnetic Characterisation of the magnetite ore within the FE1 Ore Body, Mining Lease M09/166
- ✓ **CRIMM** (Changsha Research Institute for Mining and Metallurgy – Hu’nan University, China)  
Physical and Magnetic Characterisation of the magnetite ore within the FE1 Ore Body, Mining Lease M09/166
- ✓ **Bureau Veritas** (Specialist Iron Ore Laboratories – Perth and Adelaide)  
Physical and Magnetic Characterisation of the magnetite ore within the Mt Narryer, Mining Lease M09/168
- ✓ **GR Engineering Services** (Perth) and Yantai Xinhai (Mining Research and Design Company – China)  
Lead engineer GR Engineering in cooperation with Xinhai Design Company completing definitive ore processing and low-cost engineering design





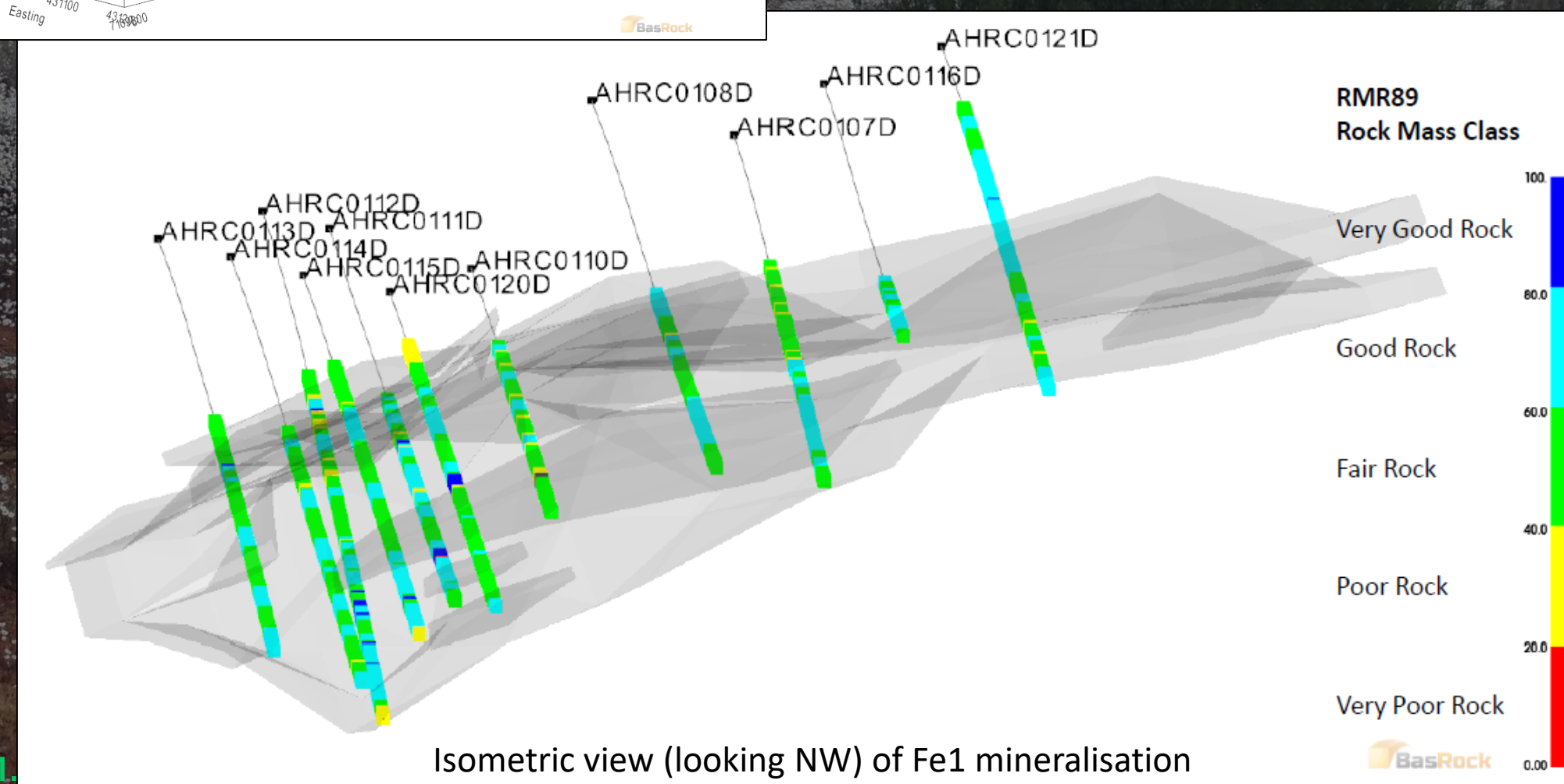
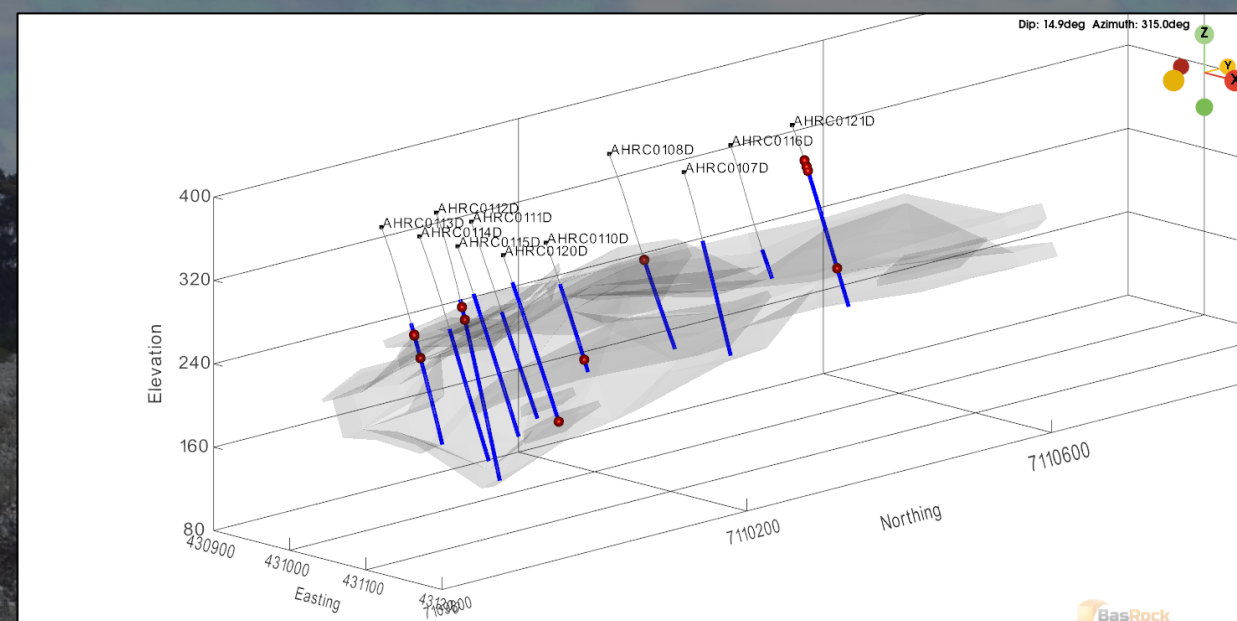
Entech Mining Consultancy commissioned to undertake Geotechnical study of Fe1 deposit. Including collating and validating geotechnical and structure logging, and analysis.

Rock mass characterization, and summary of rock mass statistics by type and domain.

Structural discontinuity characterization, and summary of statistics by defect set and domain.

Development of geotechnical model and analysis of special variability in rock mass.

Pit design and analysis

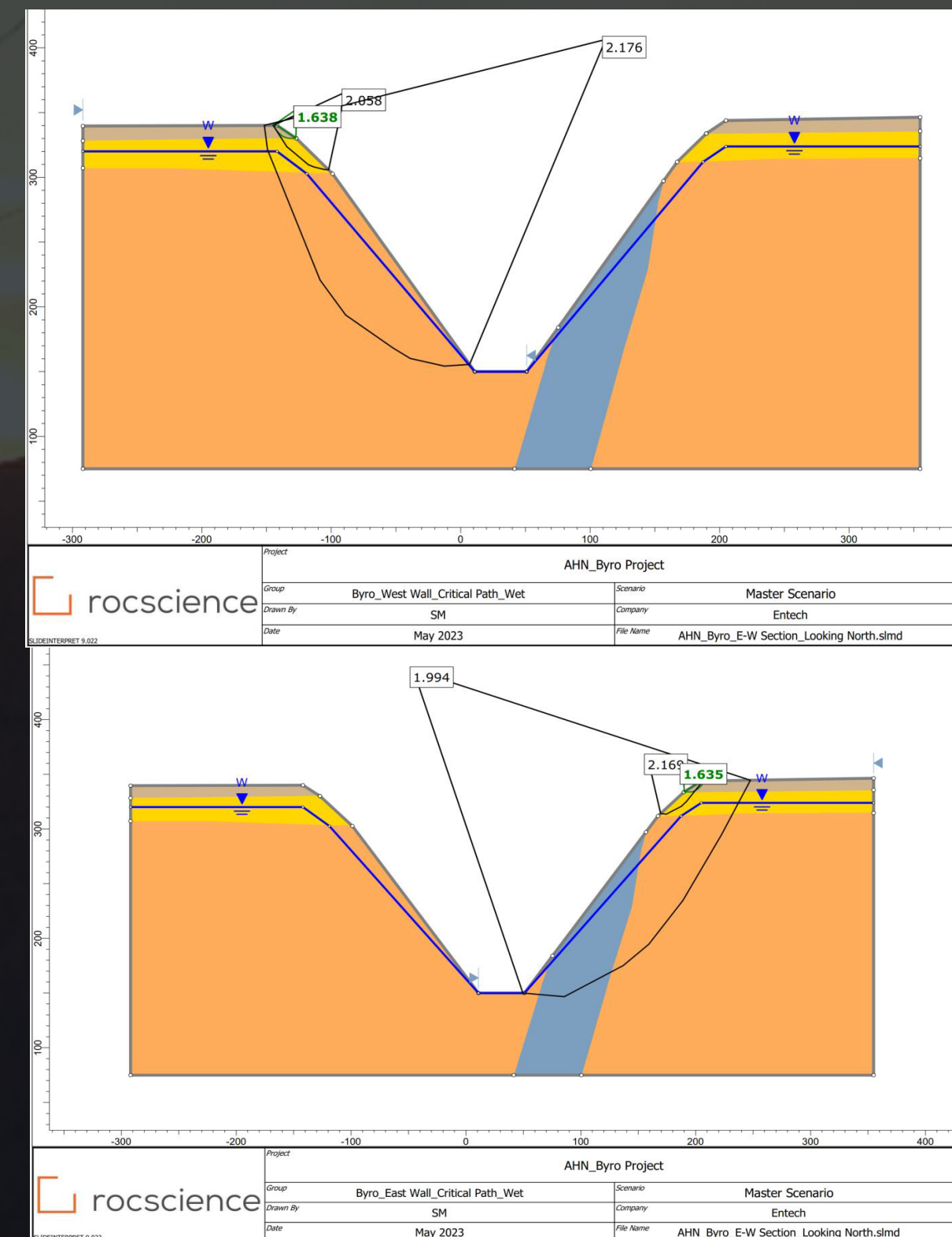
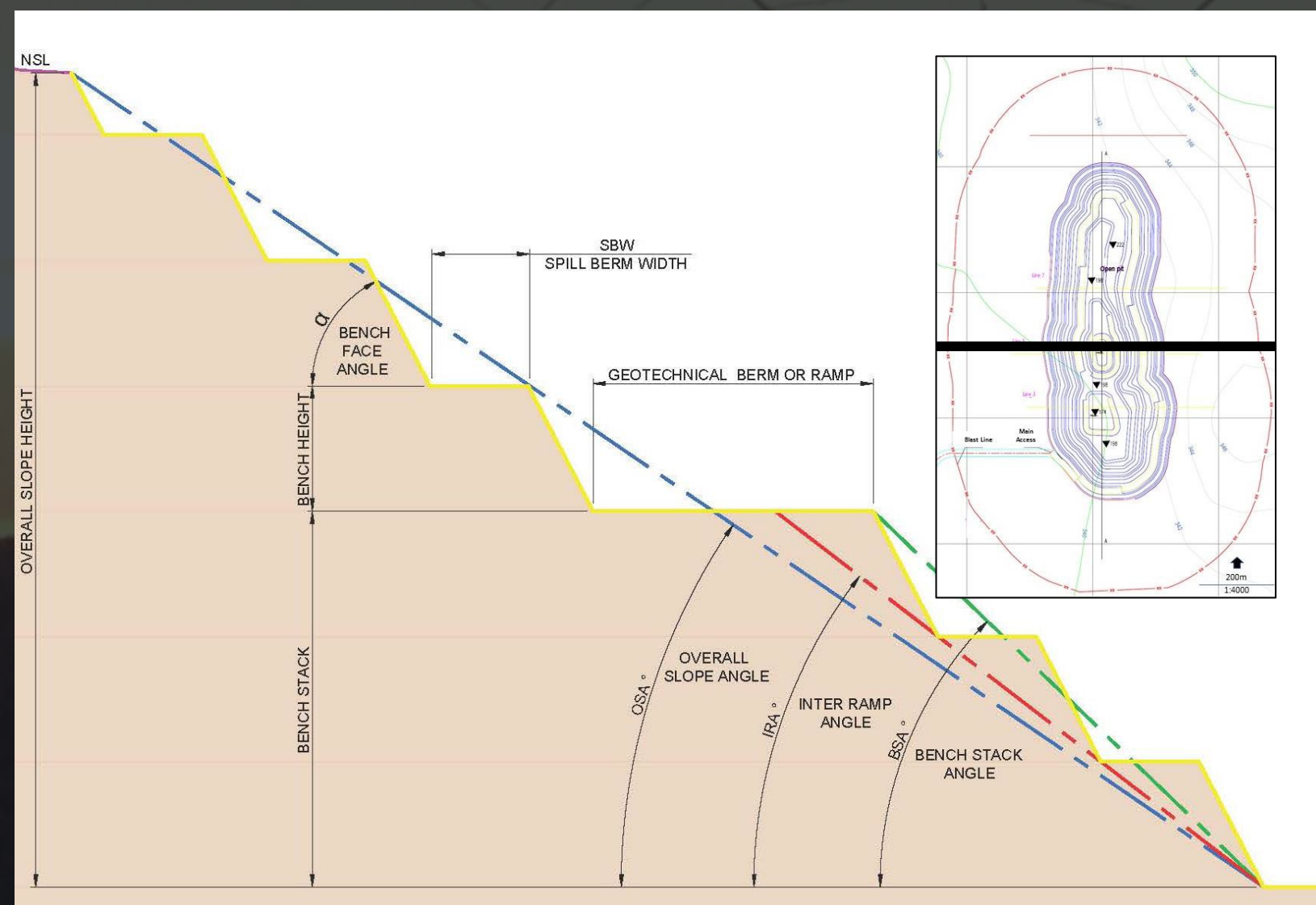


Isometric view (looking NW) of Fe1 mineralisation



Preliminary results indicate:

- 10m to 20m bench height
- Fresh rock bench angle of 75°
- Fresh rock spill berm width of 9m
- Inter-ramp angle of 54.3 °



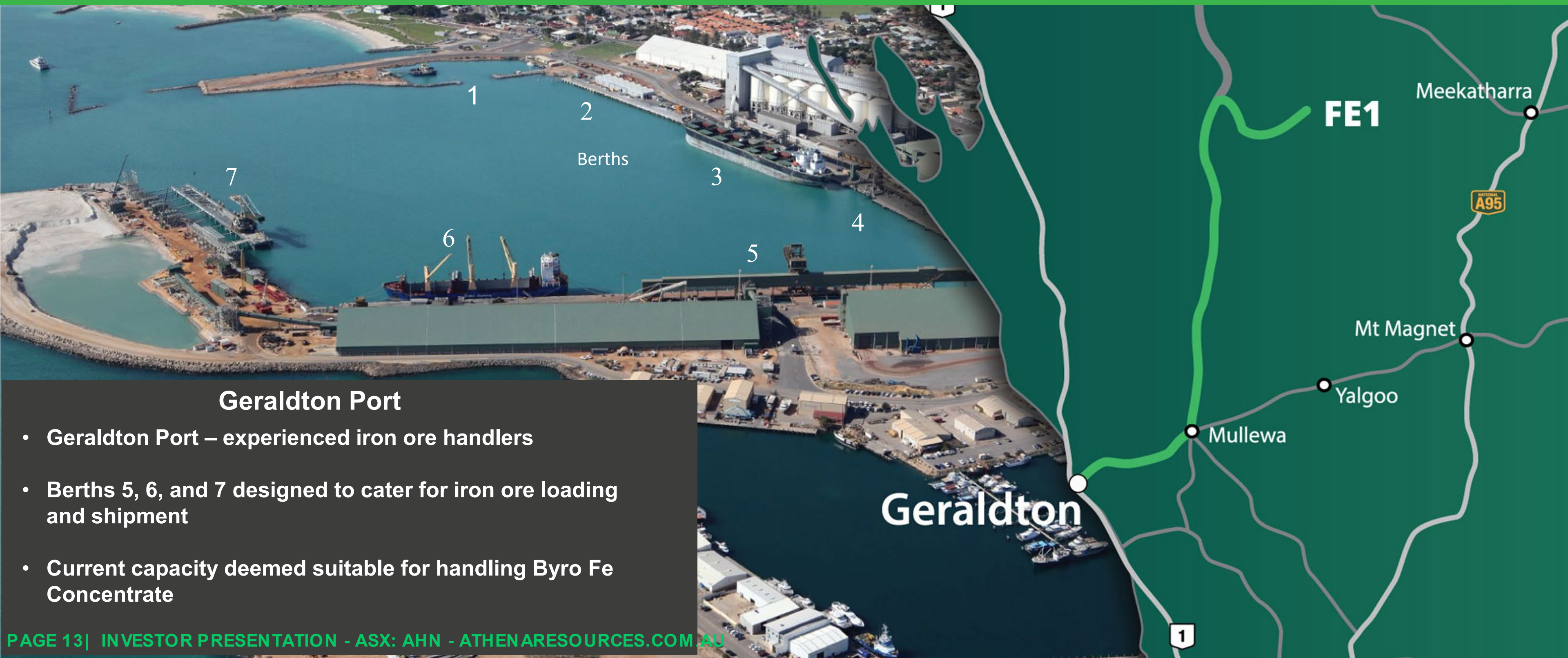
Deposit/Pit	Material	Bench Height (m)	Bench Face Angle (°)	Spill Berm Width (m)	Inter-Ramp Angle (°)
FE1	Transported/Oxide	10	45	5	34.7
	Transitional	20	60	9	44.2
	Fresh	20	75	9	54.3





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# Infrastructure



## Geraldton Port

- Geraldton Port – experienced iron ore handlers
- Berths 5, 6, and 7 designed to cater for iron ore loading and shipment
- Current capacity deemed suitable for handling Byro Fe Concentrate





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# Environmental, Social, Governance

Steelmakers need to decarbonize - responsible for 8% of the world's CO2 emissions.

Traditional blast furnaces consume high power relative to iron output. Electric Arc furnaces with high grade magnetite use less power per unit of steel produced.

Blast furnaces use coking coal as a reducing agent, to strip iron ore to make crude steel. This process is responsible for 90% of output in the world's largest steel market, China.

Direct reduced iron (DRI) requires a high grade, low impurity iron ore above 66% (4% above the benchmark index and 5-6% above the grades of major Pilbara iron ore producers) to function.

China, generates around 2t of CO2 for every tonne of steel.

Cleaner processes, such as direct reduced iron and electric arc furnace using high grade ore like Magnetite, burn far less fossil fuel, generating around 1.4 and 0.4t of CO per tonne of steel currently.

This feed stock is in short supply, with only 4-5% of the iron ore sold worldwide making the grade, much of that out of politically risky Ukraine and Russia.

As it stands, some of the forecasts for the steel industry to reach net zero emissions globally by 2015, needs something approaching 50-60% of all primary steel production to be from processes. And that requires something in the region of 1.2 to 1.4 billion tonnes of plus 66% grade iron ore.<sup>1</sup>

**Athena has the ability to be part of the solution delivering green steel**

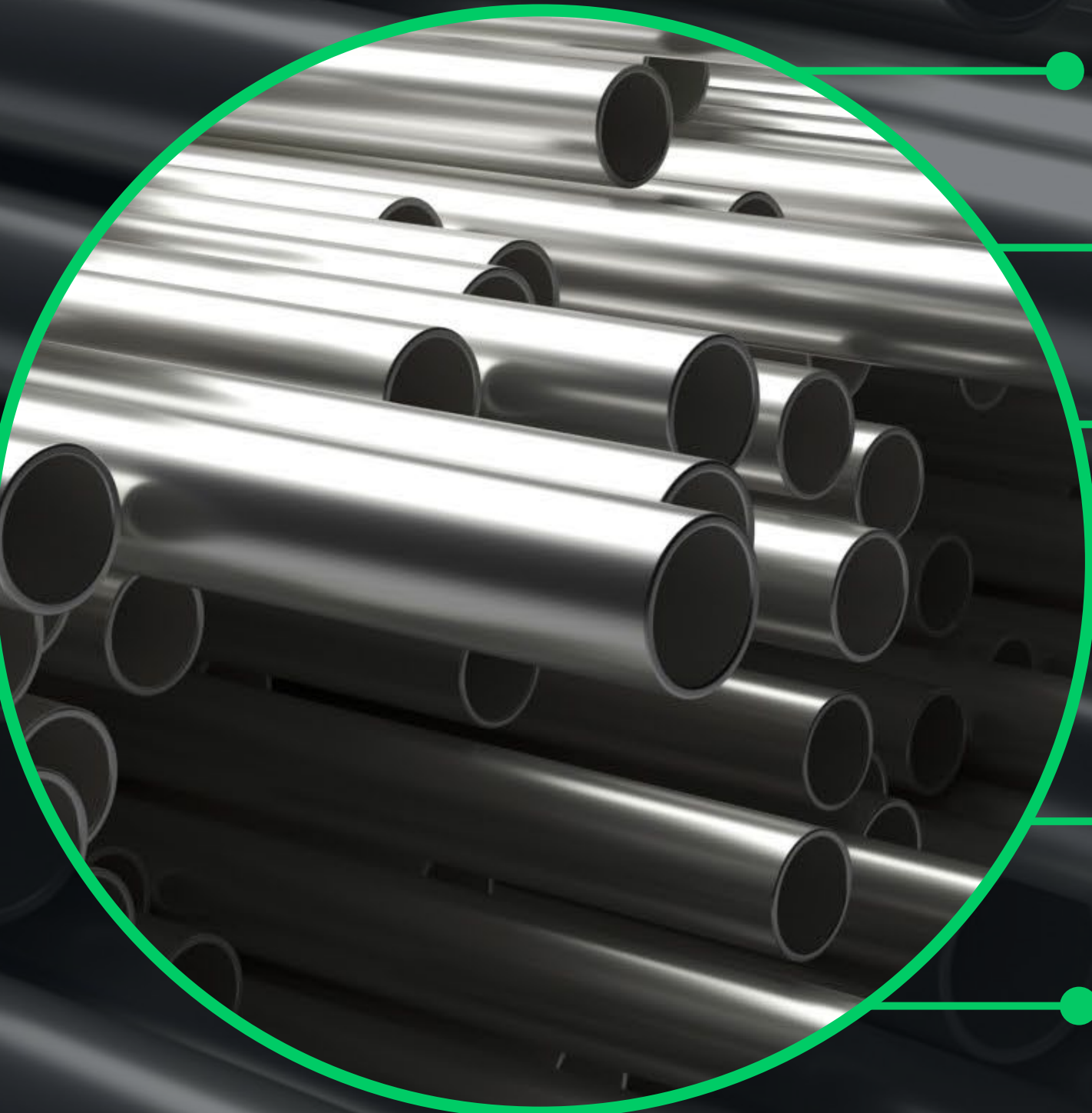




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# Investment Summary

Green Steel Opportunity in Mid-West Western Australia

- 
- Byro magnetite is the highest grade and potentially lowest cost in Australia
  - Byro's superior iron content of > 72% Fe presents clear opportunity to feed Green Steel market demand
  - 29.3 Mt MRE completed including 24Mt Indicated category
  - Pre-Feasibility Study commenced with significant advancement in engineering, processing, pit optimisation, permitting, and cost estimates.
  - Further work for PFS to include mine design, scheduling, hydrology, and power requirements
  - PFS completion anticipated late Q3 2023





## Corporate



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