

## ASX Announcement

4<sup>th</sup> of September 2024

# Operational Update for Project Iron Bear

### HIGHLIGHTS

- Production of **Direct Reduction grade pellets** based on Iron Bear DR<sup>1</sup> concentrate has started with different chemistries being tested to achieve optimum metallisation and physical properties for low carbon steel production
- Phase 2 of Pilot plant test work based on **1.8 tons of sediment** has been completed and confirms **high magnetic Fe recovery rates** for the production of BF<sup>2</sup>, DR and RF<sup>3</sup> concentrates (in aggregate magnetic Fe recovery is in excess of 97%)
- Field geological surveys completed in July and August identified potential **large outcrops of haematite DSO** (Direct Shipping Ores) and **large magnetite outcrops**, which are not part of the current Inferred and Indicated Mineral Resource. Geological samples have been taken and are being analysed.
- **18 tons of drill cores** have been collected and shipped to COREM in Quebec City to start phase 4 of the metallurgical test work, targeting the production of approximately 4 to 5 tonnes of BF and DR concentrate for **metallurgical testing by potential steel clients**.

Cyclone Metals Limited (ASX: CLE) (**Cyclone** or the **Company**) is pleased to announce an operational update on its project Iron Bear to its shareholders.

***This announcement has been approved by the Company's board of directors.***

Paul Berend, CEO of Cyclone Metals, commented:

*"I am pleased to report that we have started small scale production of DR pellets which are critical for green steel production and are projected to be in very high demand in the next couple of years as numerous direct reduction steel plants are being built in the Middle East, the USA, and Canada. The Iron Bear mineral resource is still delivering more positive surprises with potential Direct Shipping Ore outcrops identified during our recent field trips. The potential of these large outcrops is unknown, but we are excited by the upside"*

1: DR concentrate - Direct Reduction concentrate which is used in DR steel plants using natural gas or hydrogen

2: BF concentrate - Blast Furnace concentrate which is used in BF steel plants using coal as a reductant

3: RF concentrate - Reverse Flotation concentrate which is waste stream from the flotation circuit

## About The Iron Bear Project

The Iron Bear Project consists of ten licenses totalling 7,275 ha on 291 graticular Mineral Claims which are 100% owned by Cyclone Metals Ltd.,

### IRON BEAR PROJECT HIGHLIGHTS

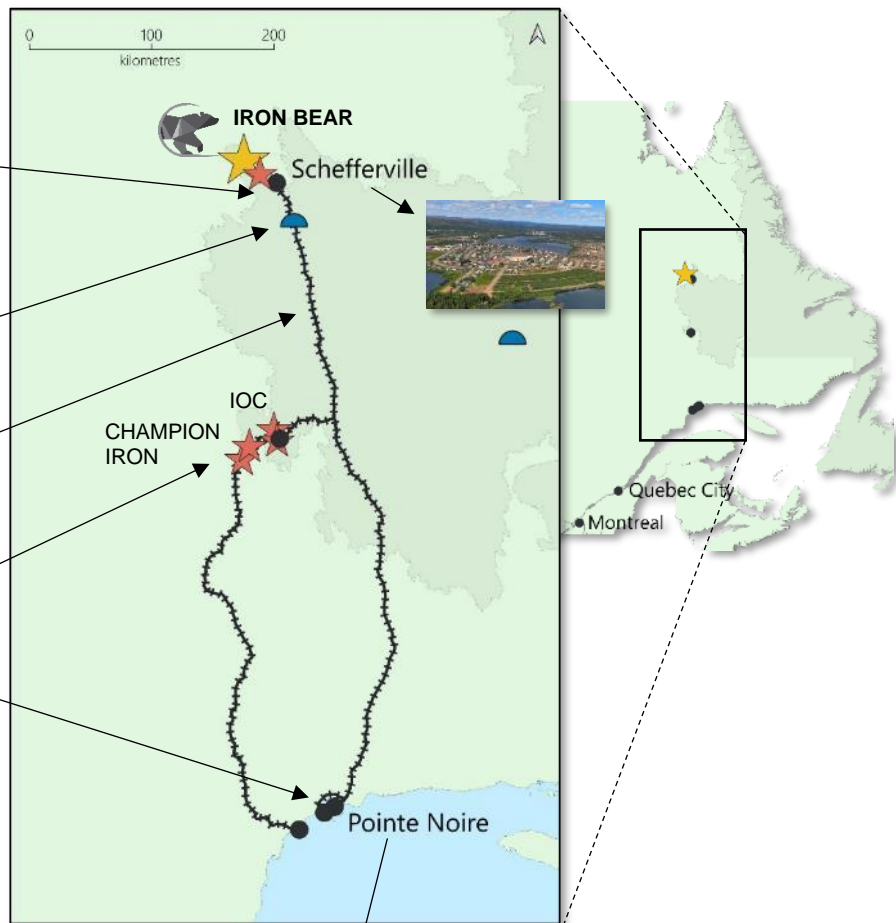
- 1 **Asset located in Canada**, less than 25km from an **open access heavy haul railway** connected to an **open access iron ore export port** and 75 km from a **hydro-electric plant**
- 2 **World class 100% owned** Iron ore mineral resource of **16.6 billion tons @ 29.3 Fe%** (inferred and indicated JORC 2012 compliant)
- 3 **Pilot Plant** production of **high quality DR<sup>1</sup> grade concentrate grading 71,3% Fe and 1.1% SiO<sub>2</sub>** with high yields due to an exceptional low impurity ore body
- 4 **Rapid and realistic development plan** focused on establishing a **JV with a Tier 1 organisation** to bring Iron Bear to decision to mine in three to four years

### IRON BEAR ACCESS AND INFRASTRUCTURE

- ✓ Schefferville is located 25km away from Iron Bear. Good infrastructure including direct flights to Sept Isles twice a week. Connected by road to the Iron Bear.
- ✓ Access to low-cost hydropower from Menihék located 70km from Project Iron Bear
- ✓ Open access heavy haul rail is available 25km from Iron Bear Project
- ✓ Champion Iron, IOC (Rio Tinto) and Arcelor Mittal local iron ore producers
- ✓ Open access Pointe Noire Port is accessible with extensive Iron Ore Export Facilities for Capsize vessels

★ MAJOR IRON ORE PROJECT

🌊 HYDROPOWER FACILITY



## Update on the Iron Bear Development Plan

The Iron Bear Project is underpinned by a clear operational plan to rapidly de-risk the asset and enable a potential JV partner to achieve decision to mine in 3 to 4 years.

Cyclone is pleased to report that all of the key development milestones, announced in June 2023 to the financial markets, have been achieved. The project is developing with encouraging results, including the pilot plant test work which has delivered high-quality magnetic products (including DR grade products) with high yields and the geological modelling and field work which has delivered a substantial Mineral Resource upside. For more information, we suggest that you refer to ASX release dated 11<sup>th</sup> of April 2024 for an overview of the mineral resource upgrade and to the ASX release dated 23<sup>rd</sup> of April 2024 for a description of the DR magnetite concentrate produced by the iron bear pilot plant.

The next key value milestones are the production of high-quality DR pellets for DR steel mills and the establishment of a JV with a strong operational partner to fund the Iron Bear project development and provide a balance sheet which can support the high capex required to bring a project of this scale into production.

On the short term, Cyclone is focussing on refining the chemistry of the DR pellets, on starting engineering studies to de-risk the power assumptions and rail assumptions, and on evaluating the potential of the DSO and magnetite outcrops.

The chart below summarises the progress of the Iron Bear Strategic Plan on A Page which is essentially the project development roadmap.



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## Production of Direct Reduction Pellets

### **Introduction to DR pellets**

DR pellets are the necessary feed for direct reduction-based steel production, which is a technology to produce steel using natural gas or hydrogen as a reductant, instead of coal which is used in traditional blast furnace steel production. The main advantage of DR steel making over blast furnace steel making is the much lower carbon footprint, which is half when using natural gas and closer to zero when using hydrogen. Hydrogen based DR steel making is often referred to as 'green steel' if the hydrogen is sourced from a renewable source of energy. Most DR steel making today is located in the Middle East and to a lesser extent, India. There are many expansions of DR based steel production happening in the Middle East and the Americas; due to the roll-out of CBAM (Carbon Border Adjustment Mechanism) in Europe (high taxes on steel based on the carbon content) and various other policies to reduce the carbon footprint of steel making.

DR pellets have very specific and hard to replicate metallisation or reduction properties. Subsequently there are only four substantial producers in the world of DR pellets on the seaborne market today (Vale, IOC, and LKAB, and Samarco). DR pellets currently command a premium of USD 50/t versus the 65% Fe index. In comparison the standard BF pellet premium is only USD 17/t which is similar to the conversion costs. **If Iron Bear is able to successfully produce DR grade pellets, Iron Bear will achieve a price premium of over USD 30/t for no additional cost versus a BF pellet.**

### **Iron Bear DR pellet test work**

Cyclone has commissioned Corem, a reputable metallurgical laboratory-based Quebec City, to manufacture and test BF and DR pellets based on iron bear BF and DR concentrates.

The manufacturing of pellets required two main steps: (1) the production of green balls in a rotating cylinder (see picture below) and (2) the green balls are then cooked in a pot grate furnace with a controlled flow of heated air to produce pellets.

**Figure 1: Photo of green balls being produced from iron bear concentrate**





Figure 2: Corem pelletising pot grate furnace and control console



Figure 3: First iron bear pellets produced 28th of August 2024



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Cyclone has designed 4 different chemical compositions for the DR pellets, which are being produced in small batches and being tested for physical and metallisation properties.

The pellets are currently being tested and the results are expected to be released in the next two weeks.

DR pellets reduction properties (i.e. how they behave in a different type of DR reactors) vary between pellets from different producers, and this ongoing test work will establish whether or not our Iron Bear pellets will be able to compete with the leading DR pellet products on the market and achieve the projected USD 30/t premium versus conventional pellets.

## Field geological surveys

Cyclone completed two field geological surveys in July and August 2024. Our team of geologists were able to physically survey the geophysical targets which had been identified by the desktop studies completed by Resource Potentials Pty Ltd and Burnt Shirt Pty Ltd in the first quarter of 2024. During these field surveys, numerous outcrops were identified, which correspond to magnetic and/or gravity highs, and rock chip samples were collected.

The rock chip samples have been shipped to COREM for mineralogical and sighter test work which will determine whether these prospective areas warrant exploration drilling.

Some remarkable outcrops were identified (see pictures below), which had not been drilled and as such are not included in the Iron Bear Mineral Resource statement. Some of these outcrops appear to be regular magnetite taconites and some others could be medium to high grade hematite deposits – potentially, direct shipping ores. We will be able to provide more specific information once the results of the sighter test work are available, anticipated by end of October 2024.

*Figure 4: Paul Berend and Jeremy Peters on taconite outcrop during July survey trip*





Figure 5: Outcrops on ridge above primary deposit area

Taconite outcrops on ridge above primary deposit zone



Figure 6: Massive outcrop on eastern side of the property

Massive outcrops exist on multiple ridges around the primary deposit area



Figure 7: Outcrop samples for analysis

Outcrop sample



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## Core Sample Selection for Phase 4

The Cyclone team also selected and collected 18 tons of sediment for the phase four pilot test work. The bulk samples of sediment have been carefully selected to reflect the full life of mine of the proposed mining operation. The purpose of the phase four pilot test is to refine the design of the pilot plant and produce 4 to 5 tons of BF and DR concentrates. These magnetite concentrates will be used to produce bulk samples of DR pellets for metallurgical test work by potential customers. Steel makers typically require 200kg to 400kg bulk samples of product to validate a product.

Cyclone has positioned itself in an to start negotiating off take agreements with potential customers by end of Q4 2024 for concentrates and Q1 2025 for pellets.

*Figure 8: Empty core trays from preparation of samples*



*Figure 9: Sample transport bags*



*Figure 10: Samples prepared in bags*





## Compliance Statements

### **Forward-Looking Statements**

This document may include forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning the Company's planned exploration program and other statements that are not historical facts. When used in this document, the words such as "could," "plan," "expect," "intend," "may", "potential," "should," "further" and similar expressions are forward-looking statements. Although the Company 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 further exploration will result in additional Mineral Resources.

### **Competent Persons**

Exploration and technical information has been reviewed and compiled by Jeremy Peters FAusIMM CP (Mining, Geology), a Director of Burnt Shirt Pty Ltd, who has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration 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".

Metallurgy and processing information has been reviewed and compiled by Paul Vermeulen MAusIMM, MAIST, a Director of Vulcan Technologies Pty Ltd, who has sufficient experience which is relevant to the method of processing under consideration 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". Mr Vermeulen consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

The Competent Person for the 2024 Mineral Resource estimate is Mr Jeremy Peters FAusIMM CP (Geo, Min), a Director of Burnt Shirt Pty Ltd. The Mineral Resource estimate is stated in accordance with the provisions of the JORC Code (2012). Mr Peters has more than five years' experience in the estimation and reporting of Mineral Resources for iron mineralisation in Australia and overseas, to qualify as a Competent Person as defined in the JORC Code. Mr Peters consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.

The Competent Person for the 2024 Exploration Target estimate is Mr Jeremy Peters FAusIMM CP (Geo, Min), a Director of Burnt Shirt Pty Ltd. The Exploration Target is postulated in accordance with the provisions of the JORC Code (2012). Mr Peters has more than five years' experience in the postulation of Exploration Targets to qualify as a Competent Person as defined in the JORC Code. Mr Peters consents to the inclusion in the presentation of the matters based on his information in the form and context in which it appears.