

## **CENTRAL EYRE IRON PROJECT TEST WORK SIGNALS COARSER PRODUCT, LOWER POWER CONSUMPTION AND COSTS**

**Iron Road Limited** (Iron Road, ASX: IRD) is pleased to announce that ongoing test work from the Definitive Feasibility Study (DFS) at the Central Eyre Iron Project (CEIP) on South Australia's Eyre Peninsula, is expected to deliver improvements within the processing circuit over the initial Prefeasibility Study outcomes.

### **Highlights**

- Ongoing DFS test work results have highlighted that the addition of a gravity beneficiation circuit following the grinding stage in the process plant design is expected to result in:
  - Product size (or coarseness) of total concentrate production increasing from -106µm (p80) to between -150µm and -170µm (p80), improving value-in-use benefits for potential customers;
  - Higher iron recovery (at least 0.8% improvement), equivalent to additional \$20M annual revenue with direct flow through to EBITDA; and
  - Lower power requirements (milling power reduction of at least 30%), smaller ball mills and reduction in associated fixed plant requirements, the benefits of which are yet to be quantified.
- As a result, the final DFS outcome is in addition likely to report:
  - Potential for lower operating costs (through reduced power and consumables usage);
  - Potential for reduced capital costs for the overall processing circuit, with the cost of the gravity circuit more than offset by savings from smaller ball mills and associated plant; and
  - Improved concentrate marketability.
- Additional test work has been commissioned to confirm these results

As a result of the extensive test work and processing studies undertaken to date for the DFS, Iron Road has been able to identify an opportunity to increase concentrate coarseness and iron recovery via the introduction of a gravity beneficiation circuit immediately following the ball mills.

Gravity beneficiation exploits the significantly differing densities of the magnetite ore and waste material in order to separate the two, and has been used in minerals processing for several decades. The relatively coarse nature of the CEIP ore body, compared to other finer Australian magnetite projects, allows the use of this well proven processing technology.

Iron Road Managing Director, Mr Andrew Stocks, said that the results were a testament to the skill and ingenuity of Iron Road's Adelaide based study team.

"This straightforward enhancement to our processing design has the potential to significantly improve our processing circuit efficiencies and costs," Mr Stocks said.

"Put simply, a gravity based separation stage removes some of the recirculating material that would have otherwise been directed through the ball mills again for unnecessary grinding. This allows us to install smaller ball mills that will use less power. Power use makes up a very significant part of our expected operating costs and the ball mills are an expensive capital component, so this is a very pleasing development," Mr Stocks said.

Iron Road is advancing towards the completion of its Definitive Feasibility Study (DFS) for a fully integrated iron concentrate export business – which includes the proposed mine, port and infrastructure corridor – with completion of the DFS expected at the end of the year. The Company is also moving forward with government submissions for the assessment and approvals process as well as financing and partnership discussions.

### Technical Background

Iron Road Limited has been conducting an extensive laboratory test programme as part of the DFS into the CEIP. As part of this programme, particle by particle results for the RMS (rougher magnetic separator) concentrate were interpreted from the QEMSCAN mineralogical analysis to determine if an opportunity existed to increase iron recovery via a gravity beneficiation circuit. Only the +150µm and +106µm fractions of the RMS concentrate were analysed as these are representative of the particles which would report to the stream being considered for feed to a gravity circuit.

Particles were analysed on the basis of iron content, particle mass and particle density. The density showed a bimodal distribution (also reflected in the particle iron grades), with concentration of particles into a high density grouping (>4.2 t/m<sup>3</sup>) and a low density grouping (<3.1 t/m<sup>3</sup>). Disparate particle density is necessary for a stream to be considered viable in a gravity beneficiation process, such as spiral concentrators.

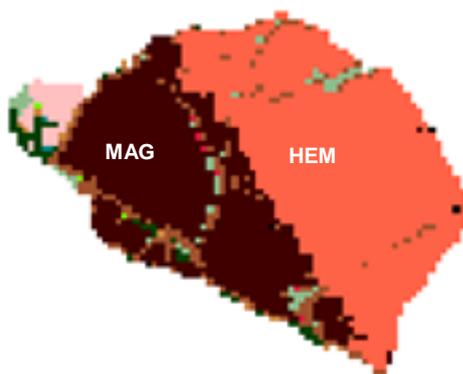


Figure 1 – Pictorial map of a -300+212µm mixed iron oxide particle in the rougher magnetic separation concentrate.

The particle shown in Figure 1 is indicative of the iron-rich particle which would be targeted by the gravity beneficiation circuit. Without gravity beneficiation, the particle would be milled to a smaller size which would separate the brown (representing magnetite) and orange (representing a type of hematite). As the orange mineral is non-magnetic, this would be “lost” in the cleaner magnetic separators. In a gravity beneficiation circuit, iron-rich particles have high density and a high probability of reporting to the gravity concentrate, raising iron recovery and coarsening the final concentrate size distribution.

Initial sighter tests were conducted over a shaking table, shown in Figure 2. The results were promising, showing a clear separation between the high density particles (darker stream) and the low density particles (pale stream). The tailings from the spirals were passed over a scavenger magnetic separator (SMS). Approximately 40% of the mass was rejected to a coarse tailings stream. Elimination of 50% of the material sent to the gravity beneficiation circuit from within the milling circuit, significantly lowers the mill recirculating load and hence mill power and mill size. This translates into significant capital and operating cost reductions.

Modelling indicates that 10-20% of total concentrate production will emanate from the gravity circuit. Concentrate size from the gravity circuit is expected to be greater than -200µm (p80). When combined with the mill feed concentrate of -106µm (p80), the final product size for sale is expected to be in the order of -150µm to -170µm (p80).

Capital costs savings could be expected in the following areas.

- Smaller mills;
- Reduction in cyclone and feed pump sizes;
- Reduction in number of classification screens;
- Reduction in number of cleaner magnetic separators; and
- Reduction in piping, electrical, civil and structural costs associated with all of the above.



**Figure 2 – Shaking table test showing characteristic clean separation between magnetite (dark stream of particles on the left) and gangue (sandy coloured stream of particles on the right).**



**Figure 3 – Full scale rougher spiral test showing darker magnetite concentrate being split from the particle stream on the spiral.**

Some of the capital cost reduction would be offset by the cost of installation of the gravity circuit.

Operating costs would decrease due to.

- Reduction in mill power consumption by at least 30%;
- Reduction in ball mill media consumption;
- Further reduction in overall power costs due to less operating units that consume power;
- Reduction in maintenance costs due to smaller mills and less operating units in the downstream circuits.

In addition, iron recovery is expected to increase by at least 0.8%. At today's iron ore prices, without any pricing premium factored in, this increase in recovery approximately equates to an additional \$20 million annual revenue with direct flow through to EBITDA over the project life. Other operating cost area improvements are expected to fall significantly greater, though are yet to be quantified.

Promising results from the first round of gravity beneficiation test work has encouraged preparation of an additional bulk test work sample to provide a larger sample for confirmatory spiral circuit test work. A wider range of test conditions, including multiple splits and wash water are also planned. The results from the open circuit test work, the mineralogical analyses received to date and the SysCAD modelling are being used to design a gravity beneficiation circuit consisting of spirals to produce the gravity concentrate and scavenger magnetic separators (SMS) to treat the spiral tails. A schematic representation of the process arrangement is shown in Figure 4 (overleaf).

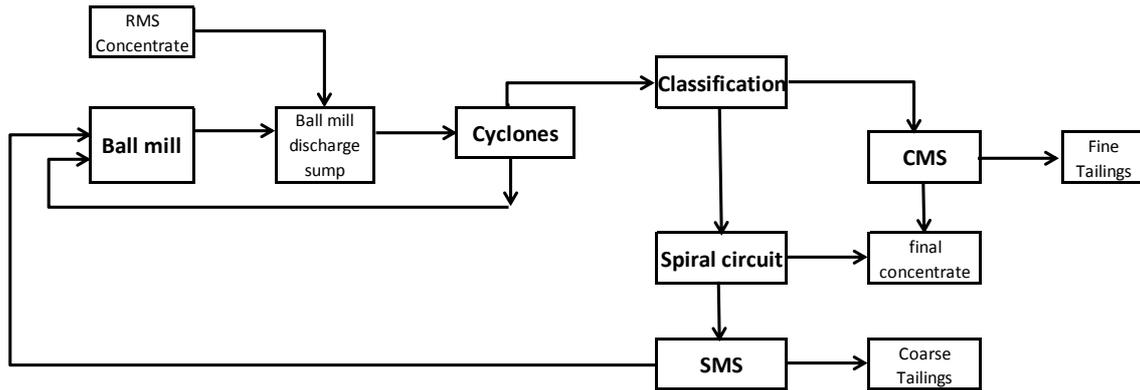


Figure 4 – Schematic block diagram of proposed spiral gravity beneficiation circuit

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Iron Road’s principal project is the Central Eye Iron Project, South Australia. The wholly owned Central Eye Iron Project is a collection of three iron occurrences – Warrambo, Kopi & Hambidge.

A prefeasibility study has demonstrated the viability of a mining and beneficiation operation initially producing 12.4Mtpa of premium iron concentrate for export. A definitive feasibility study is currently assessing production of 20Mtpa of iron concentrates.

Metallurgical test work indicates that a coarse-grained, high grade, blast furnace quality concentrate may be produced at a grind size of - 106µm grading 67% iron with low impurities.

