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## **“Green” pig iron in Western Australia builds for Reedy Lagoon**

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The business case for Reedy Lagoon (RLC) producing pig iron in Western Australia has received additional support from the latest study undertaken by Dinsdale Consultants.

Previous reports by Dinsdale have concluded that:

- RLC could obtain a better return with less market risk if it sold its magnetite from Burracoppin as pig iron rather than just selling magnetite concentrates into the market for iron ore
- High-purity pig iron (HPPI) could be made from Burracoppin magnetite using HIs melt technology.

The latest Dinsdale study investigated the potential for RLC to produce HPPI using HIs melt technology with net zero carbon dioxide emissions.

The Dinsdale Report confirms that HIs melt technology can replace all the coal in the smelt process with biochar (produced from biomass). Replacement of coal with biochar would mean that the carbon dioxide emitted from the HIs melt smelt process comes from an equivalent amount of carbon dioxide extracted from the atmosphere in growing the biomass and producing the biochar: all of the carbon dioxide emissions of the smelt process could be treated as neutralized. In contrast, conventional blast furnaces are not able to substitute more than about 50% of their coal requirements.

Carbon dioxide emissions from smelting iron ore in conventional blast furnaces vary from about 1.8 to 2 tonnes for each tonne of pig iron produced. HIs melt, when using coal, can reduce these emissions to 1.3 tonnes carbon dioxide per tonne pig iron depending on feedstocks and other inputs.

In order to be able to claim net zero carbon emissions from the production of pig iron under government carbon accounting principles, all emissions of greenhouse gases involved in the process of producing pig iron, (including not only the smelting, but also the mining, processing of mine product into concentrate, the harvesting and processing biomass and biochar, and associated transport) need to be eliminated or mitigated. By far the greatest source of carbon emissions involved in the process of producing pig iron is from smelting. The use of biochar instead of coal in the HIs melt process should mean that the emissions from the smelting will be treated as near zero under government accounting principles so that achieving net zero carbon emissions is worth pursuing.

The HIs melt smelt process also produces a net excess of green electricity (estimated by Dinsdale in its report as 20MW when operating). This green electricity may be able to be counted as mitigating carbon emissions. The excess electricity could potentially be used to produce green hydrogen for use in a first step in the smelt reaction in order to further reduce carbon emissions.

The production of “green” High Purity Pig Iron (HPPI) is important for Western Australia and for Australia, generally:

- Australia (in particular Western Australia) would benefit from moving up the value chain from selling just iron ore;
- The export market for pig iron is not dominated by one large purchaser;
- “Green” pig iron should be free from carbon taxes and similar penalties and HPPI currently attracts a premium price;
- The production of “green” HPPI opens doors for the establishment of a “green” steel industry in Western Australia (see [Technology Investments Roadmap: First Low Emissions Technology Statement 2020, Dept of Industry, Science, Energy and Resources](#)) providing a further opportunity for Australia to move up the value chain and to become self-sufficient in a critical commodity.

The production of “green” pig iron requires the development of sufficient supply of biomass to replace coal in the smelt process. Dinsdale estimates that approximately 2 million tonnes of biomass would be required per annum to produce the 800,00 tonnes of biochar needed for RLC to produce 1 million tonnes per annum of “green” pig iron.

The study identifies a range of biomass sources for the project but chief amongst them is a crop that is harvested annually, is drought resistant has low input requirements and improves soil condition. The crop has been extensively grown in parts of Europe and North America for production of biomass used mainly for heating and energy generation. The project’s location within the 38 million hectare Western Australian Wheat Belt is fortuitous – it is where our Burracoppin Magnetite deposit is located, but is strategic for the necessary biomass cropping. Farmers active in remediating degraded soils within and peripheral to the Wheat Belt would benefit.

The use of biochar to replace coal in the smelter creates another substantial business opportunity for RLC to establish an 800,000 tonne per annum biochar production network providing an alternative cash crop for farmers.

It will take time to establish a sufficient supply of biomass to replace coal in the smelt process. A local coal mine located at Collie is identified in the Dinsdale report as a temporary source of suitable coal for the smelter during the progressive transition from coal to biochar (expected to take 5 to 10 years).

This transition period is much shorter than the time expected to reduce carbon emissions from conventional blast furnaces.

RLC is assessing sites for the smelter at Collie, Kwinana and Northam, obtaining permits for drilling at the Burracoppin Magnetite deposit, assessing additional sources of iron feed for the smelter, investigating and assessing biomass crops, and seeking collaborations with government agencies to further develop this exciting project.

Authorised for release on behalf of the Company.

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