Date: 22 December 2023

ASX Code: MAN

Capital Structure
Ordinary Shares: 615,759,920
Current Share Price: 4.5c
Market Capitalisation: $27.7M
Cash: $15.5M (Sept 2023)
EV: $12.2M
Debt: Nil

Directors

Lloyd Flint
Non-Executive Chairman
Company Secretary

James Allchurch
Managing Director

Roger Fitzhardinge
Non-Executive Director

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Mandrake Partners with US-based Electroflow for Innovative Direct Lithium Extraction

Highlights

- **Mandrake has executed a non–exclusive Strategic Alliance Agreement with US-based Direct Lithium Extraction (DLE) company Electroflow Technologies, Inc.**
- **Electroflow are funded and backed by Bill Gates' Breakthrough Energy Fellows programme**
- **Electroflow's proprietary electrochemical process uses lithium-selective electrodes to convert saltwater brines into lithium chemicals for batteries**
- **Electroflow has received brine samples from Mandrake's 100%-owned Utah Lithium Project with processing now underway**
- **Brine composition results from analytical laboratory are expected next month**
- **Compilation of JORC-compliant Exploration Target underway**
- **Mandrake well-funded - $15.5M**

Mandrake Resources Limited (ASX: MAN) (Mandrake or the Company) is pleased to advise that it has executed a Strategic Alliance Agreement (SAA) with innovative Direct Lithium Extraction (DLE) provider Electroflow Technologies, Inc. (Electroflow).

Electroflow has to date been funded by Bill Gates' Breakthrough Energy (BE) group through the Breakthrough Energy Fellows programme. The Breakthrough Energy group is a world-renowned organisation that has invested more than US$2 billion in cutting edge companies focussed on the energy transition.

Managing Director James Allchurch commented:

'DLE technology is absolutely critical to the future of lithium and the broader global energy transition. Our research into DLE quickly identified Electroflow as one of the leading technologies in the ever-expanding DLE sector, having been selected by Bill Gates' Breakthrough Energy Fellows programme as some of the best and brightest innovators to help the world transition to a clean energy future.

US-based Electroflow, in conjunction with Mandrake, is currently assessing several funding opportunities through the US Department of Energy (DoE) under the US federal government's Bipartisan Infrastructure Law (BIL).

With brine analytical results expected shortly and the ongoing development of our JORC compliant Exploration Target it will be a busy couple of months for the Company.'

About Electroflow

Electroflow's proprietary electrochemical process uses lithium-selective electrodes to convert saltwater brines into lithium chemicals for batteries. Their process eliminates the need for excessive chemical reagents for purification and offers high scalability with a modular cell stack design.

Electroflow is backed by Bill Gates' Breakthrough Energy Fellows programme. The BE group has a stated aim of "accelerating the energy transformation by supporting cutting-edge research and development, investing in companies that turn green ideas into clean products, and advocating for policies that speed innovation from lab to market. Through investment vehicles, philanthropic programs, policy and advocacy efforts, and other initiatives, BE works with a global network of partners to accelerate the technologies needed to build a carbon-free economy."

As part of an end-to-end approach to accelerating innovation, BE has established the Breakthrough Energy Fellows (BE Fellows) programme to support the world's best and brightest innovators as they develop technologies to help the world get to a clean energy future.

Electroflow co-founder and CEO Eric McShane earned his Bachelor of Science in chemical engineering at Cornell University, a Doctor of Philosophy in chemical engineering at the University of California, Berkeley, and completed a postdoctoral position at Stanford University. He brings to the company his expertise in building electrochemical systems, having designed lithium-ion battery, nitrogen reduction, and lithium extraction systems in his graduate and postdoctoral studies.

Electroflow co-founder and CTO Evan Gardner earned his Bachelor of Arts in chemistry at Boston University, a Doctor of Philosophy in bioinorganic chemistry at Georgetown University, and he completed a postdoctoral position at Stanford University. He is an expert in designing and synthesizing materials as well as performing a variety of chemical separations.

CEO Eric McShane commented:

'We're extremely excited to enter this Strategic Alliance Agreement with Mandrake, who we view as an emerging major player in the US lithium space with potentially one of the largest lithium brine resources in the country. We look forward to working with Mandrake as we develop our DLE technology and unlock sustainable lithium supply within the US.'

Direct Lithium Extraction

Direct Lithium Extraction (DLE) is a cutting-edge development in the realm of renewable energy. It offers an alternative approach to meeting the growing demand for lithium, which is essential for battery production in electric vehicles and energy storage systems.

Unlike traditional methods such as open-pit mining or evaporation ponds, DLE extracts lithium from brine sources more efficiently and with less environmental impact. This method is

particularly advantageous because it uses less water and can tap into lower concentration lithium sources, making it a more sustainable option.

While DLE is not without its challenges, its potential to provide a steadier and more environmentally friendly lithium supply is significant. This technology is an important step forward in the energy transition, helping to facilitate the shift towards cleaner energy and transportation solutions.

Details of Strategic Alliance Agreement

Importantly for both parties, the SAA is non-exclusive and non-binding, meaning that Mandrake and Electroflow can freely engage with other DLE providers and brine producers respectively in order to find the optimal processing 'match'.

Indeed, Mandrake's strategy is to potentially trial several DLE technologies to determine the optimal DLE processing technology for the Utah Lithium Project.

The material components of the SAA are summarised below.

Processing of lithium brine – the parties will consider terms and conditions pursuant to which: (i) Mandrake will provide lithium brine from the Utah Lithium Project to Electroflow for processing using its proprietary DLE technology and, subject to the results of testing, facilitate the negotiation of end user agreements for product; and (ii) Mandrake could be a supplier of lithium brine for Li_2CO_3 or LiOH production from the DLE technology, including revenue sharing on end user sales of lithium product to be agreed ensuring a commercially advantageous outcome for both Mandrake and Electroflow on the revenue share.

Identification and approach to end users of lithium product – the parties will work together to identify appropriate end users of lithium product that will be approached regarding offtake arrangements.

Corporate Opportunities – the parties recognise that there are potential synergistic commercial benefits in assessing corporate opportunities that involve both the DLE technology and the Utah Lithium Project. Such opportunities may include government and industry clean energy funding opportunities or a simultaneous investment by a strategic investor into both Electroflow and Mandrake. The parties agree to work together to identify and consider appropriate corporate opportunities.

Other activities - any other strategic benefits which the parties determine through the exchange of information and sharing of resources in respect of the DLE technology and the Utah Lithium Project as agreed by the parties in writing.

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

Competent Persons Statement

The information related in this announcement has been compiled and assessed under the supervision of Mr James Allchurch, Managing Director of Mandrake Resources. Mr Allchurch is a Member of the Australian Institute of Geoscientists. He has sufficient experience that is relevant to the information under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Allchurch consents to the inclusion in this announcement of the matters based on his information in the form and context in which it appears.