



## **Shareholder Update - India Project**

**Wednesday 26 June 2019:** Environmental Clean Technologies Limited (ASX: ECT) (ECT or Company) provides the following update on the status of its India project regarding the current MOU with India partners NLC India Limited (NLCIL) and NMDC Limited (NMDC).

### **Key points:**

- Meetings have been held with our project partners NLCIL, NMDC and the Australian High Commission in Delhi
- In the absence of formal advice from NMDC, ECT has formed the reasonable opinion that NMDC will not proceed with the project
- ECT has made the subsequent decisions to rescind the previously offered MOU extension, and further to withdraw from the current MOU in its present form in order to pursue / focus on other key projects in India, Australia and other global jurisdictions
- Maintain focus of India team as global hub for engineering services, proprietary equipment manufacturing and broader development portfolio of ECT technology projects
- Continued strong and active relationship with NLCIL, approval received for shipping 20 tonnes of NLCIL lignite to Australia for high-value application testing across Coldry, HydroMOR, COHgen and possible Waste-to-Energy (WTE) technology programs.

### **Status of the ECT India Joint project with NLCIL and NMDC**

As referred to in the Company's previous announcement (7 June 2019) NMDC held its board meeting on 28 May 2019 at which time, the proposal to proceed with the India Project was tabled for approval.

In the period since 28 May, ECT and its partner NLCIL have increased their level of communication with NMDC, however, as at the time of this release, and as advised in the announcement on 7 June, whilst the project was an agenda item at the board meeting, the Company is yet to be formally advised of the outcome.

Both ECT and NLCIL boards had approved the project and were awaiting NMDC's approval to complete the agreement which would lead to the signing of the binding Research Collaboration Agreement (RCA).

ECT Chairman, Glenn Fozard, and ECT India CMD, Shri P Selvakumar have, over the past week, travelled to Hyderabad, Neyveli and Delhi, to meet with NMDC, NLCIL and the Australian High Commission respectively. The purpose of these meetings was to seek clarity on this matter and a formal response to both the outcome of the NMDC board meeting and the proposed MOU extension.

Despite not receiving formal advice during this period, based in part on the meetings held in the last week, the Company has formed the reasonable position that NMDC will not be proceeding with the project.

On this basis, ECT has made the decision to rescind the offer of any further extension, withdraw from the MOU in its current form, and move forward with its other key projects in India, Australia and other global jurisdictions.

In taking this action, and noting the lack of any formal advice from NMDC, the Company has also considered the time elapsed since the NLCIL and ECT board approvals for the signing of the RCA in

November 2018, the increasing lack of responsiveness in correspondence with NMDC, and the lack of any signed MOU extension.

Should formal advice be received from NDMC to suggest an alternate course of action, then ECT will consider this and address it with the partners at an appropriate time.

NMDC's apparent unwillingness to pursue the project is, from ECT's perspective, new and unexpected.

Withdrawal from seeking an extension of the MOU is a significant change to our plans and expectations around the timing and funding of the India project but in discussion with NLCIL and the Australian High Commission it did not seem likely that the MOU or associated RCA could continue in the absence of one party and terminating ECT's efforts to extend or enter into these agreements appears to be the shortest path towards exploring options with NLCIL and, potentially, with other steel industry participants. Importantly, ECT will seek to continue to work with the Government of India and its relevant Ministries to develop cost-effective, low-emission solutions for iron, steel and alternative uses of lignite.

### **Ongoing NLCIL relationship for technology development**

In contrast to the challenges in seeking a formal resolution to the current status with NMDC, ECT continues to enjoy the support of, and work closely with, NLCIL in pursuing the development of its portfolio of technologies in India.

Having returned from Chennai, ECT Chairman Glen Fozard commented "Whilst we acknowledge the change to status and engagement with NMDC, the need for ECT to move forward is closely related to our strong relationship with NLCIL together with the desire to see alternative projects take shape as part of our Company's broader India strategy."

"Over the past week I have met with senior NLCIL representatives and we have agreed that we must continue to work closely together, as part of our broader collaboration announced in April 2019, to develop solutions for a range of energy and resource beneficiation challenges that exist for India, with a particular focus on the future use of their brown coal."

"Our work on the Matmor project has brought the two companies into a strong and positive alignment and we look forward to honouring this relationship with targeted projects as we move ahead."

### **Approval for 20 tonne NLCIL lignite shipment to support high-value testing program**

Further to the Company's announcement of 18 April 2019 which outlined the development of a collaborative framework with NLCIL for broader technology applications, ECT is pleased to advise that NLCIL and ECT have approved the shipment of 20 tonnes of NLCIL lignite which is currently being prepared for delivery to Australia.

This large coal sample will provide the feedstock necessary to conduct a range of tests in support of a broader Indian technology development program aligned with key target markets in India, including:

#### **Coldry**

Under the broader collaboration with NLCIL, ECT has re-commenced its earlier evaluation of Coldry-specific developments within India. Coldry has a wide market opportunity in India, not only given the extensive thermal power market but also in regard to new technology integration such as feedstock for waste-to-energy technologies.



Whilst all of the drivers for Coldry expansion in Australia also exist in India, and noting the relatively higher cost of lignite as a limitation in India, it is the scale of the India market, and the stated and increasing desire for lignite upgrading technologies over the past years which provide the drivers for continued testing.

The data gathered from the test program will quantify the key performance indicators associated with thermal power applications, solid fuel-fired boiler operations, and high-value additional technologies such as pyrolysis, waste-to-energy and hydrogen production, all of which require a scalable front-end drying solution.

### **Matmor/HydroMOR**

Approximately 5 tonnes of the lignite sample will be allocated to Matmor/HydroMOR testing.

The primary objective of this testing program will be to expand on Indian-based lignite data and refine the planned operating modes for future HydroMOR pilot plant development either in India or other global jurisdictions. The test data will help refine temperature profile management, residence times, and pellet quality management through the entire process chain.

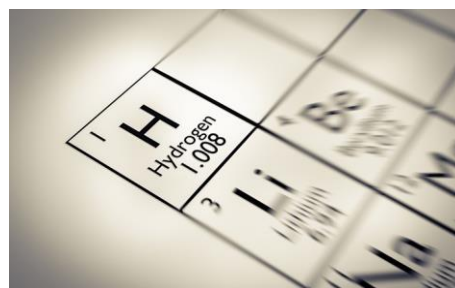
In previous announcements (24 November 2016 & 22 November 2017), the Company identified the advancement through research and development of its lignite-based primary iron making process, Matmor, to such a degree that new findings resulted in a fundamental shift in the process chemistry. This resulted in the submission of a new patent application in 2016. It is envisaged that HydroMOR will supersede Matmor.

As such, the ability to conduct targeted, rapid, smaller-scale testing via the Company's lab-scale unit and test scale plant in Australia to support the larger test program at a future pilot plant, will improve the lead time and reduce the cost of certain experimental activities.

### **COHgen**

Approximately 500kg of the lignite sample will be allocated to testing its suitability and performance within the COHgen process.

COHgen, or Catalytic Organic Hydrogen generation, is a unique lignite-based hydrogen production process currently in the early stages of research and development.



The Company is progressing towards conclusion of the test program utilising Victorian lignite to generate the necessary data to prepare a COHgen patent application. The addition of NLCIL lignite to the test program will serve to both broaden the data set underpinning the patent application and validate its suitability for use within COHgen.

### **Waste-to-Energy (WTE)**

As announced by the Company on 7 June 2019, ECT entered into a binding Heads of Agreement (HoA) with liquidators McGrath Nichol, for the acquisition of assets of the CDP Group of companies. The HoA sets out the proposed terms of the transaction, subject to a 4-week exclusivity period through which detailed due diligence progressed.

Further to this announcement, the parties have agreed to a 14-day extension to the due diligence program with the completion date expected to be 3 July 2019 unless the transaction is completed earlier.

The proposed acquisition of WTE technologies has been pursued with the view to identifying platforms that may have synergies with Coldry, both in terms of waste heat utilisation for the drying of Coldry and for use of Coldry to enhance the WTE process.

ECT and NLCIL see potential for such higher-value processes globally across markets with lignite resources, and suitable waste.

### Next Steps

The Company's Coldry technology provides the gateway solution to all of the subsequent ECT technology portfolio. In addition, it provides its own unique standalone solution in direct consumption in a range of energy intensive systems.

Coldry offers a cost-effective solution for significantly lower CO<sub>2</sub> intensity than as-mined lignite. This coupled with India's commitment under the Paris Climate Agreement to reducing its CO<sub>2</sub> intensity will continue to drive the Company's interest in developing its technology portfolio in the region.

While Coldry may be used for electricity generation, NLCIL is particularly interested in developing higher value applications for its lignite resources, exploring opportunities for both vertical and horizontal diversification. As such, Coldry testing will focus on the higher value utility steam and heat market, the WTE market and downstream processes such as hydrogen and fertiliser production.

### Status of Suspension

Further to the Company's Announcements on 7 June and 13 June, ECT is currently engaged in due diligence for the proposed Waste-to-Energy technology acquisition. The completion date is expected to be 3 July 2019 unless completed earlier, and the Company expects to subsequently come out of suspension on 4 July.

ECT will provide further announcements as required.

### For further information, contact:

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#### About ECT

ECT is in the business of commercialising leading-edge energy and resource technologies, which are capable of delivering financial and environmental benefits.

We are focused on advancing a portfolio of technologies, which have significant market potential globally.

ECT's business plan is to pragmatically commercialise these technologies and secure sustainable, profitable income streams through licensing and other commercial mechanisms.

#### About Coldry

When applied to lignite and some sub-bituminous coals, the Coldry beneficiation process produces a black coal equivalent (BCE) in the form of pellets. Coldry pellets have equal or superior energy value to many black coals and produce lower CO<sub>2</sub> emissions than raw lignite.

#### About Matmor

The Matmor process has the potential to revolutionise primary iron making.

Matmor is a simple, low cost, low emission production technology, utilising the patented Matmor retort, which enables the use of cheaper feedstocks to produce primary iron.

#### Areas covered in this announcement:

ECT (ASX:ECT)	ECT Finance	ECT India	India Project	Aust. Projects	R&D	HVTF	Business Develop.	Sales
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