



Company Update – India Project & Local Activities

16 October 2018: Environmental Clean Technologies Limited (ASX: ECT) (ECT or Company) is pleased to provide the following update on the progress of its project in India and local activities.

Key points

India

- **Research Collaboration Agreement**
 - ECT Meetings concluded with NMDC CMD N. Bajindra Kumar and NLCIL CMD Rakesh Kumar
 - ECT Chairman met with Add. Secretary for Ministry of Steel, Rasika Chaube, to present and discuss the India project
 - External due diligence report delivered to NLCIL and NMDC ahead of finalisation of the Research Collaboration Agreement (RCA)
 - NLCIL planning for additional Board meeting before 9th November
 - NLCIL and NMDC representatives invited to attend ECT AGM on 30th of November
- **Project promotion**
 - ECT presented the India project at NMDC International Conference on October 8th-11th
 - ECT attended the India-Australia Business and Community Awards (IABCA) as finalist

Local Activities

- **Steam package contracts**
 - Installation of bespoke Coldry solid fuel handling system completed
 - Commissioning due to commence this week
 - Contract steam services due to commence by late October
 - Turnkey solution provides the customer with fixed price steam delivery
- **Boiler package contracts**
 - Coldry solid fuel provides a hedge against rising gas price and the challenges of pure biomass fuel use
 - Establishment of key service partners to deliver steam and boiler packages
 - First major tender for boiler package submitted
 - Feasibility study started for demonstration biomass boiler at the High Volume Test Facility (HVTF) at Bacchus Marsh.

Research Collaboration Agreement (RCA)

Over the past 2 weeks, ECT Chairman, Glenn Fozard, together with CMD ECT India, Mr Ashley Moore, and Chief Operating Officer, Jim Blackburn have been in India to attend meetings with NLC India Limited (NLCIL), NMDC Limited (NMDC) and Indian Government representatives and to oversee the conclusion of the final compliance and legal review of the Research Collaboration Agreement (RCA) as outlined in the Company's 1 October 2018 announcement.

The CMD's of both NLCIL and NMDC continue to express clear, strong commitment to the project, acknowledging that the prospect of the project being the largest ever research and development (R&D) collaboration between Australia and India has the eyes of Government keenly directed towards them, driving the complexity of internal requirements and need to undertake rigorous review.

Importantly, ECT has supported this recent review process through the additional support and analysis work provided by ECT's advisers Corrs Chambers Westgarth (Legal advisers, Australia), Grant Thornton (Tax and Accounting, Mumbai) and Induslaw (Legal and Compliance, Mumbai).

ECT understands that the RCA review report from external consultant *Lakshmikumaran & Sridharan* (L&S) has been completed, and the three companies (NLCIL, NMDC and ECT) will be meeting in Chennai today, October 16 to finalise discussions and agree on an updated RCA ahead of Board approvals.

Commenting from Neyveli, ECT Chief Operating Officer, Jim Blackburn said "As our shareholders are very much aware, this further round of review for finalisation of the RCA has been an important and detailed process, necessary to clear the way for seeking Board approvals from each of the partners scheduled for early in November. While we are aware that NLCIL conducted an earlier Board meeting last Tuesday (9 October 2018) in Delhi to attend to internal compliance matters, we have been told NLCIL will hold an additional Board meeting in the first week of November, seeking approval to proceed. While this is later than the target date previously set by both NLCIL and NMDC (30th October 2018), the parties have agreed that no further extension is required and that the MOU remains on-foot and effective.

"The Board and Executive of ECT are keenly aware that as we approach these final stages of the contracting process, there is increased attention given by our shareholders and the broader market to each detailed step in reaching financial close for the India project. This is to be expected yet does not detract from the need for management to focus on the project implementation as a whole, as it is this approach which will ultimately drive growth in shareholder value. Each of the parallel processes outlined previously including contracting and governance, financing, engineering, resource planning and the like each play a part in the successful delivery of the Pilot plant project and lay the foundation for our progress into commercialisation."

ECT COO, Jim Blackburn remains in India this week, and together with ECT India CMD Ashley Moore and Chairman Glenn Fozard, will ensure on-the-ground representation by ECT through to signing to provide any further support necessary to facilitate the consideration and approval of the RCA by the Boards of NLCIL and NMDC.

Prior to, and immediately following the expected partner Board approvals, key processes and milestones for the project will include:

- Formal arrangements for the signing ceremony and exchange of project documents expected during the week of the 19th to 24th of November
- Banking and transactional arrangements for the transfer of project funds
- Establishment and initial meeting of the Project Control Committee
- Opening of the ECT operational offices in Chennai and Neyveli

Senior delegates from NLCIL have expressed a desire to attend the ECT AGM on November 30, and both NLCIL and NMDC will be invited to attend to jointly present the project to ECT shareholders.

Project Promotion

As previously reported (1 October 2018), in the lead up to financial close of the India project, ECT has been active in a number of global forums in response to growing industry and media interest in the project and its Coldry and Matmor technologies.

These forums provide an important opportunity to develop key strategic links between the R&D stage of the India project and a future pathway for commercial projects.

In addition to media briefings, the following events have recently been completed.

- NMDC International Conference on Minerals and Metals; Outlook 2030
 - 9-10 October 2018
 - New Delhi, India
 - Ashley Moore (CMD, ECT India) presenting
 - 400+ delegates

Following the Chairman's meeting with the Additional Secretary for Ministry of Steel, Rasika Chaube, she presented to the conference in her closing remarks that, "Indian companies are encouraged to JV with foreign companies, particularly those foreign companies that are able to support technology transfer to India in its pursuit of the country's improving competitive position as the nation seeks to deliver an additional 200 million tonnes of steel output through to 2030."

Chairman Glenn Fozard commented, "not only does our collaborative project with NLCIL and NMDC meet 8 out of 10 objectives of the Ministry of Steel's Steel Development Fund's strategic R&D targets, it's also structured under preferred arrangements, as expressed by Ms Chaube, of the Government of India's policy for technology transfer."

This outcome is a testament to the collaborative approach ECT has taken in listening to its partners' needs and then converting that into strong commercial structures backed by comprehensive legal and tax planning.

- IABCA – India-Australia Business and Community Awards
 - 12 October 2018
 - Brisbane, Australia
 - Delegates included Indian High Commissioner to Australia, Dr Gondane
 - ECT was a finalist in the 'Excellence in Innovation' category

Chairman Glenn Fozard commented further in relation to the India project, "The development of this project has been a long and challenging process, and we acknowledge the patience and, often at times, frustration our shareholders have experienced along this journey. But this is not without reason and reflects the nature of our project as being the largest ever R&D collaboration between Indian and Australian companies. Make no mistake, this is not a throwaway comment, and all shareholders should be proud of the company's ability to persist and progress such a watershed project, where the recognition of this achievement, and what it means for our company, should only improve. The enormity of effort and work needed to complete a deal like this is difficult to appreciate and accounts for why no other company has achieved the size of R&D collaboration we are aiming to close on soon. We are acutely aware that there is no second prize in the pursuit of such lofty goals and much of the effort will be wasted if we were not able to finalise the project, but the Company and its Board and executive are confident that this will not be the case."

The Company looks forward to providing further updates as the above activities progress.

Local Activities

Steam Package Contracts - Update

Further to the Company's announcement of 9 August 2018 highlighting the signing of a \$1.3 million, 5-year deal for the provision of a turnkey solution for steam services to a customer in Victoria, Australia, the Company is pleased to advise the first stage of the contract has been completed.

The contract entails:

- Installation of an automated Coldry solid fuel handling system
- The supply of Coldry solid fuel to power the generation and provision of steam via an existing boiler system
- Provision of operating and maintenance services in partnership with Australia's leading 'process steam' system operator, Mecrus

A key requirement identified during the scoping phase was the need to maximise the operational efficiency of the customer's boiler system, which was originally designed to run on low-grade biomass such as wood chips and briquetted rice husks, rather than higher-energy solid fuel such as Coldry.

As such, the first phase of the contract entailed the design, fabrication, installation and commissioning of an automated solid fuel feed system designed to optimise Coldry consumption.

Scoping estimates indicate the system will use around half as much Coldry solid fuel compared to biomass. This efficiency is due to Coldry's lower moisture content, and significantly higher energy value and combustion temperature.

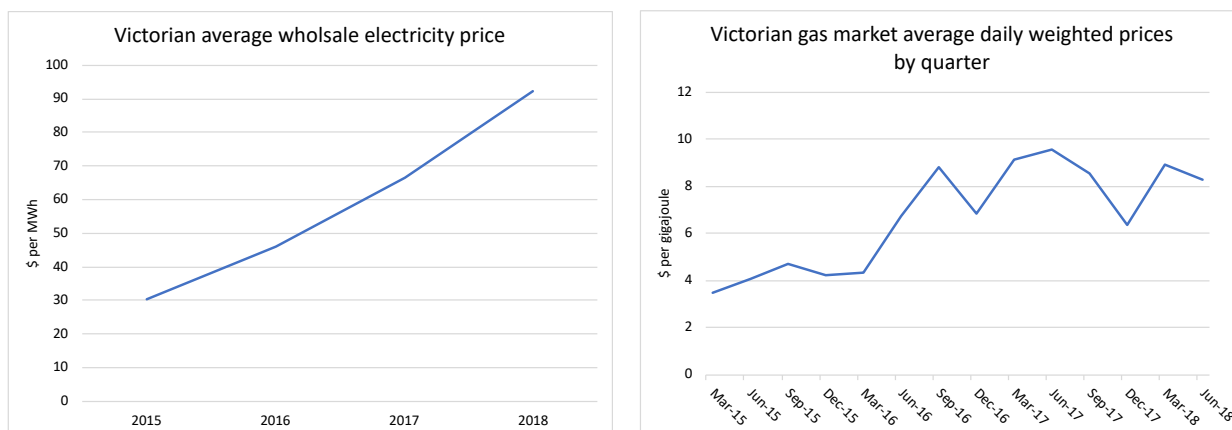
The feed system (shown below) consists of a variable feed-rate hopper and incline screw conveyor, controlled via a computer-automated program.



Commissioning of the system will commence this week, with the provision of 'process steam' anticipated to commence under contract in late October.

Boiler Package Contracts - Update

ECT COO Mr Jim Blackburn commented "The Victorian energy market has changed dramatically in the past three years, with wholesale electricity prices trebling since 2015¹ and gas prices doubling² over the same period. This has driven many businesses, reliant on industrial scale process heat, to seek alternatives.



"Unfortunately, this has put pressure on local biomass supplies, resulting in shortages and price increases, in addition to existing issues regarding the security of consistent supply. Consumers are turning to expensive stop-gap measures such as diesel. Economically, this is unsustainable, driving business to seek alternative long-term solutions.

"This problem has created an opportunity to sell product from our Coldry R&D facility. Further, following extensive consultation with consumers, it's clear they want someone to provide a solution that delivers steam, and saves money, allowing them to focus on their core business. This has created an opportunity for ECT, together with leading boiler operator Mecrus, to deliver a turnkey solution tailored to the end user's equipment and needs."

Building Strong Relationships with Boiler Manufacturers and Service Providers

ECT is pleased to advise that in support of its strategic boiler and steam package offering to the Victorian and Tasmanian markets, the Company has teamed up with *Hi-Tech QLD* and *John Thompson* boilers in addition to *Mecrus* to provide a complete turnkey solution for biomass boiler systems, specifically designed to accept multi-feedstock fuel, including wood waste, crop stubble and municipal green waste, underpinned by Coldry as the baseload fuel.

This has led to ECT's first joint tender submission, along with Hi-Tech and John Thompson for the provision a 10MW(th) boiler system to a customer in Tasmania.

ECT is also working closely with these partners to undertake feasibility and pricing for a biomass boiler system on-site at its Bacchus Marsh test facility to replace the current waste oil boiler system.

The market for industrial steam and the boilers required to produce this steam are at a significant cross-road. Most users have turned away from 100% coal-based boiler systems, and gas-fired systems have become prohibitively expensive. This has seen the next wave of migration towards biomass fuel solutions.

¹ Source: Australian Energy Market Operator (AEMO) - <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data-dashboard#average-price-table>

² Source: Australian Energy Market Regulator (AER) - <https://www.aer.gov.au/wholesale-markets/wholesale-statistics/victorian-gas-market-average-daily-weighted-prices-by-quarter>

There are still great challenges ahead for users of industrial steam when considering a pure biomass boiler system, including lower efficiency, single fuel dependency, transport and storage issues and shorter equipment lifetime.

ECT aims to solve some of these problems by offering a high-quality boiler system that can utilise variable biomass inputs while also using Coldry.

The intent behind this approach is to be able to deliver a steam solution that allows users the flexibility to choose the biomass that is most suitable (on the basis of cost, quality and supply), while being underpinned by a fuel stock (Coldry) that serves as a consistent, cost-effective base-load.

We expect that at most times, these boiler systems would use <50% Coldry to retain the biomass status, but where quality biomass becomes unavailable, Coldry would ensure continuity of steam production and operations.

Chairman Glenn Fozard commented that “there is an absence of a complete turnkey solution in the Victorian and Tasmanian markets that offers ‘steam over the fence’ to industrial users, while also delivering new equipment and often cheaper monthly operational costs. This requires assembling a high-quality team of end-to-end service providers, covering boiler plant and equipment, installation, operations and maintenance, fuel supply and management and financing. ECT now has that capability.

“The steam and boiler package approach, coupled with equipment financing solutions via our subsidiary, ECT Finance Limited, looks to deliver reliability and affordability, striking a chord in the local market.

“Following the successful rollout of our first contract, and the demonstration of our capability to deliver these packages we will continue to market our turnkey solution across Victoria and Tasmania.”

The Company will provide further updates on its local market activity as projects progress.

For further information, contact:

Glenn Fozard – Chairman *info@ectltd.com.au*

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 CO₂ 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.

About the India R&D Project

The India project is aimed at advancing the Company’s Coldry and Matmor technologies to demonstration and pilot scale, respectively, on the path to commercial deployment.

ECT has partnered with NLC India Limited and NMDC Limited to jointly fund and execute the project.

NLC India Limited is India’s national lignite authority, largest lignite miner and largest lignite-based electricity generator.

NMDC Limited is India’s national iron ore authority.

Areas covered in this announcement:

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