



Shareholder Update – October 2016

Friday, 21 October 2016: Environmental Clean Technologies Limited (ASX: ESI) (ECT or Company) is pleased to provide the following general update to shareholders.

Topics

- India activity update
- Matmor technology performance strong through volatile commodity pricing period
- Bacchus Marsh R&D Facility activity update

India Master Project Agreement (MPA)

Discussions regarding the financing and construction of the proposed Coldry Demonstration and Matmor Pilot plant in Neyveli, India have been progressing well with partners NLC & NMDC. Major focus areas have achieved desired alignment, including legal, corporate and R&D structures, together with IP protection considerations. The capital contribution basis for collaboration has firmly settled on one-third contribution each.

A highly complex and crucial piece of external advice was commissioned several weeks ago and has guided subsequent development of the MPA.

ECT Managing Director Ashley Moore stated, “As shareholders will be aware, this agreement is a first-of-a-kind for an Australian company, and for both NLC and NMDC. As such, a core element of the agreement development process entailed external expert advice from India-based, legal advisors relating to the tax and compliance matters associated with various structural options required for the project to move forward.

“The review has been complex, and involved tax, legal, legislative and compliance aspects for the Indian based corporate entities we will be using to execute the project, as well as the Governmental rules under which PSUs are required to conduct their business. This work is highly technical in nature and aims to articulate the role of the Pilot / Demonstration plant, which through successful completion of the R&D program, will pave the way for the Commercial Plant. While this important review has extended the parties intended completion period from our earlier program plan estimates, this was time well spent. Given the alignment with NLC and NMDC on the balance of the contractual elements, we are working to finalise the terms during November.”

Matmor performance through volatility / TEF revisited

The TEF study was conducted during a period of relative cyclical low pricing for coking coal, thermal coal and iron ore, resulting in a highly conservative report on the project economic performance of Matmor at commercial scale. Even with this conservatism, the case for Matmor was compelling and the parties agreed to proceed to commercial agreements.

In the months since the TEF study was completed (June 30, 2016), some significant structural changes in the steel and energy markets have highlighted the commercially compelling advantage of Matmor’s ability to utilise alternative raw materials. This helps insulate its economic performance against negative impacts of volatile input pricing.

In short, the price of coking coal – the essential ingredient for Blast Furnace (BF) steel production – has more than doubled since mid-year, and the prices of medium and high grade thermal coals – used in power generation and some Direct Reduced Iron (DRI) processes – have increased more than 50%, while the price of premium lump iron ore has increased by 20-25%. By contrast, lignite prices are flat, and iron ore fines have increased by a more modest ~10%.

Steel pricing is yet to fully respond to these changes, having increased by ~5% over the same period.

The impact of these volatile market price movements demonstrates the relative competitiveness of the ECT Integrated Coldry / Matmor technology, and highlights the advantage to be gained from being decoupled from traditional steelmaking raw materials.

ECT Managing Director Ashley Moore noted “These market price movements make the Matmor advantage demonstrably obvious and can only increase eagerness to adopt. This is one of the key points we emphasised within the TEF report to our partners, NLC and NMDC, and now provides additional support and justification as we conclude the MPA and commence the project.”

	(BF - BOF)	DRP - EAF	C/M - EAF	C/M - EAF
	Blast Furnace - Basic Oxygen Furnace	Coal Based DRI - Electric Arc Furnace	Coldry / Matmor - Electric Arc Furnace	Coldry / Matmor - EAF + Power Generation
As per the TEF study:				
Raw Material	669	801	641	641
Annual manufacturing cost	970	1,188	1,085	1,002
Capex	2,522	2,257	1,400	1,607
Annual Sales	1,264	1,372	1,307	1,307
Gross Profit	294	183	222	305
IRR	9.1%	5.0%	14.1%	17.2%

Using current prices¹:				
Raw Material	1,046	921	662	662
Annual manufacturing cost	1,347	1,309	1,105	1,022
Capex	2,522	2,257	1,400	1,607
Annual Sales	1,330	1,448	1,376	1,376
Gross Profit	-17	139	271	354
IRR	negative	2.2%	17.5%	20.0%

All prices stated in crore rupees. For further market information, refer below.²

Bacchus Marsh update

Further to recent updates regarding the Bacchus Marsh Coldry Pilot plant upgrades, the Company confirms that progress on these activities is nearing conclusion, with commissioning likely to commence prior to the end of the month (October).

These upgrades will deliver a High Volume Test Facility (HVTF), with expanded capabilities including:

- Process scalability / testing at higher product throughput
- Greater measurement & control of plant inputs, outputs and sequencing
- Ability to simulate a wider range of plant integration options

¹ Pricing has been drawn from market information available mid-October. Subsequently, further Coking Coal price increases have occurred.

² <http://bulkhandlingreview.com/coal-prices-bouncing-back/>

<http://www.theage.com.au/business/comment-and-analysis/suddenly-coal-prices-are-booming-will-the-rest-of-the-country-be-next-20161012-gs0bgd.html>

- Broader range of product applications (Coldry as a potential front end to other value added technologies, e.g. Char, Urea, synthetic natural gas)

Chairman Glenn Fozard commented “This effort has seen substantial works occur at our facility over the last several months, the results of which will deliver the company improved R&D capability, as well as allow exploration of market opportunities with surplus materials made from trial activities, defraying the costs of our R&D with new revenue.”

Further updates will be provided as the commissioning program commences.

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 licencing 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.
