



Victorian Coal Upgrading Feasibility Study Commences

28 November 2018: Environmental Clean Technologies Limited (ASX: ECT) (ECT or Company) is pleased to announce the commencement of its feasibility study for the deployment of a proposed 600,000 tonne per annum lignite upgrading plant in Victoria's Latrobe Valley, utilising its patented, zero-emission Coldry technology.

Key points:

- Scoping study & site selection previously completed November 2017
- 'EnergyAustralia' to host the site at Yallourn Power Station (subject to the parties entering binding agreements)
- Feasibility study commencing targeted for completion by March 2019.
- 'Gateway' fuel solution enabling higher-value, lower CO₂ applications from brown coal

The proposed project, to be located at *EnergyAustralia's* Yallourn power station in Victoria's Latrobe Valley, seeks to enable the lower-CO₂ use of lignite, creating a 'gateway' to a broader range of existing and emerging applications.

The feasibility study follows the initial scoping study completed in November 2017 and aims to support the Company's Australian strategy for the further commercialisation of its Coldry technology.

Of interest to shareholders will be the increased scope of the planned project since it was first proposed.

In the Company's announcement on 15 November 2017 a plant capacity of 170,000 tonnes per annum was identified as the initial starting point. Further project development activity over the past year has resulted in identification of broader opportunities, both locally and internationally, to support a substantially increased scale. The Company is continuing to qualify these opportunities.

ECT Executive Chairman, Glenn Fozard commented, "The emphasis and focus on our India project has taken necessary priority over the past year, consuming most of our resources. This resulted in the need to take additional time following the completion of the scoping study to identify the key drivers to underpin our potential Latrobe Valley project. With our India project nearing financial close, the time is right to start the feasibility study.

"We mentioned last November that building a zero-emissions Coldry plant aligns well with the recently returned State Government's 'Future Use of Brown Coal' policy¹. The industrial and political environments are supportive of technologies that deliver low or zero-emissions solutions to higher value use of lignite.

"The domestic utility heat and steam market, most of which switched to gas following the closure of the brown coal briquette plant in Morwell in 2014, has suffered from a doubling of the gas priceⁱ and tripling of the wholesale electricity priceⁱⁱ since 2015. We've progressed local market development and testing of Coldry product from our pilot plant at Bacchus Marsh, northwest of Melbourne, signing a 5-year \$1.3 million contract for the provision of turnkey 'steam services' (announcement 9 August 2018) and establishing a viable solid fuel alternative to expensive gas that can be blended with biomass".

¹<http://earthresources.vic.gov.au/earth-resources/victorias-earth-resources/coal/statement-on-future-uses-of-brown-coal>

“Our vision for the proposed Latrobe Valley project is to establish a scalable ‘gateway’ application, enabling a broader, more environmentally sensitive use of lignite which will support economic activity and employment for the region. This project holds significant interest in providing increased energy security through diversification of Victoria’s energy solutions and longer-term interest as a gateway enabler to the deployment of High Efficiency Low Emissions (HELE) electricity production if required and feasible, and low-emission chemical production, like hydrogen from Victoria’s world class lignite assets.”

Coldry to deliver improved economic and environmental outcomes

Coldry converts low-value brown coal into high-calorific value, low-moisture solid fuel pellets suitable as a gateway feedstock for applications such as:

- Utility boiler systems
- Hydrogen production
- Urea production (fertiliser)
- Blended co-firing into power station boilers
- High-Efficiency Low Emissions (HELE) electricity generation
- Matmor
- Other downstream coal conversion technologies requiring a dry coal feedstock

Coldry utilises low-grade waste heat, producing the world’s most cost-effective brown coal fuel pellet via a drying solution with zero direct emissions.

The key to the efficiency of the Coldry process, which takes lignite moisture from 60% down to between 10% and 15%, is the intended utilisation of ‘free’ low temperature waste heat from an adjacent power station.

The use of waste heat would minimise ‘paid’ energy in the process, keeping the cost down.

An environmental upside for the host power station is the significant reduction of the requirements for cooling water, reducing water taken from the local environment.

Next steps

Over the next four months, the Company will resource several key deliverables including:

- Redesign of the original core design to support 600,000 tonnes per annum (tpa)
- Review of requirements for export and site-specific factors at Yallourn Power Station

The feasibility study, once complete, will allow the Company to determine whether it is economically, commercially and technically feasible to proceed with a Coldry project in the Latrobe Valley.

In addition, ECT will progress upgrades at its Coldry high volume test facility at Bacchus Marsh, as well as a number of key infrastructure support assets, improving raw coal access and demonstrating our steam and boiler packages to Victoria and Tasmania.

ECT recognises the potential for improved brown coal use in helping balance affordability, reliability and emissions intensity across the nation’s energy system. The establishment of a large scale, zero-emission Coldry plant would take the Latrobe Valley one step closer to becoming, once again, the national flagship for reliable, affordable energy production in the context of an emissions constrained environment.

Glenn Fozard commented, “High Efficiency, Low Emissions (HELE) power stations, hydrogen production and fertilizer production are all potential industries of the future for the Latrobe Valley and they all need dry brown coal. Coldry can provide this economically and with zero-emissions.”

Background to Latrobe Valley Coldry project

Running parallel to the Company's continued R&D programs to support its India project, 2017 saw the re-emergence of project development opportunities in the Latrobe Valley.

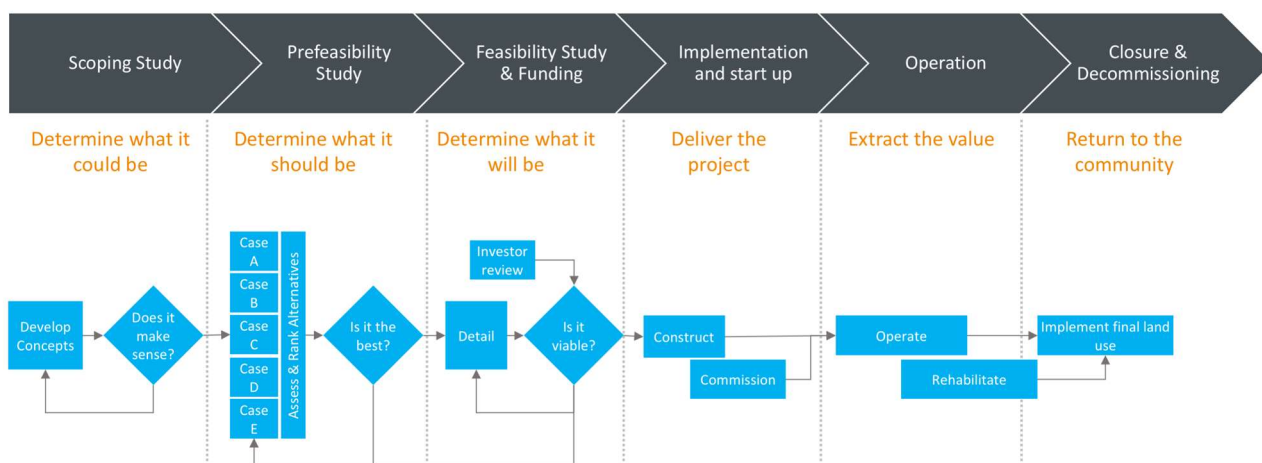
Formal preparations for the feasibility program for the construction of a large-scale Coldry demonstration plant in the Latrobe Valley began in July 2017 (see announcement 12 July 2017).

Titled the 'Gateway Fuel Victoria Project', this initiative stands in strong alignment with government policy and regional development directives and responds to clear energy market signals.

In line with the established project planning structure, the feasibility study program is divided into several phases, including:

- Scoping study and selection phase (complete)
- Pre-feasibility study (complete)
- Feasibility study and funding assessment (commencing)

The feasibility study will aim to establish the business case for the construction of a large-scale Coldry plant in the Latrobe Valley.



The Company will provide further updates on the progress and outcomes of the feasibility study in due course.

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 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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ⁱ Source: AER - <https://www.aer.gov.au/wholesale-markets/wholesale-statistics/victorian-gas-market-average-daily-weighted-prices-by-quarter>

ⁱⁱ Source: AEMO - <https://www.aemo.com.au/Electricity/National-Electricity-Market-NEM/Data-dashboard#average-price-table>