



ENVIRONMENTAL CLEAN  
TECHNOLOGIES LIMITED

# AGM Presentation

Wednesday 22 November 2017

*“Bridging the gap between today’s use of  
resources and tomorrow’s zero-emissions future”*



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## Section 1

### Domestic Activity

- Organisational changes
- Bacchus Marsh
- Latrobe Valley
- New IP
- Capital Management

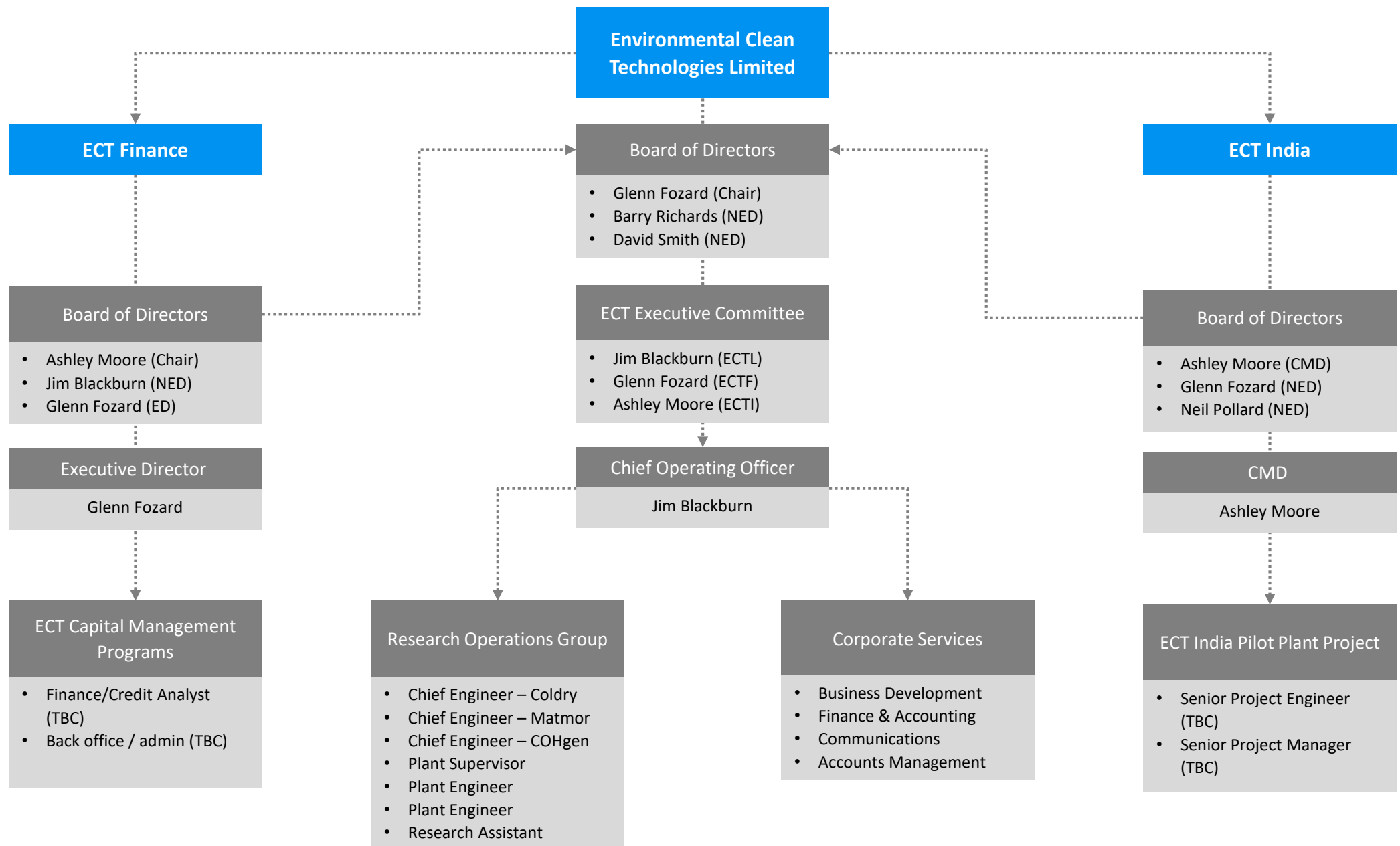


## Section 2

### India Activity

- TEF Study
- MPA
- NITI Aayog
- External Financial Review
- Current Status
- Path ahead

# Organisational Changes



## Summary of Project Drivers

- Enhanced R&D capability thanks to broader and more flexible operational parameters
- OHS&E improvements
- Automation enhancements
- Maintenance improvements
- Technology scale-up testing & de-risking and process parameter optimisations
- Enhanced drying temperature testing and simulation allows for improved application simulation
- Ability to produce larger test samples for R&D trials in end applications
- Enhanced feedstock supply capability to support Matmor Test Plant validation process

# Bacchus Marsh

## High Volume Test Facility

Stage 1 Jun 2016 – Jan 2017

- Target Capacity Up to 10,000 tpa
- Budget ~\$875,000
- Status Complete

Stage 2 Jan 2017 – June 2017

- Target Capacity Up to 15,000 tpa
- Budget ~\$500,000
- Status: Complete

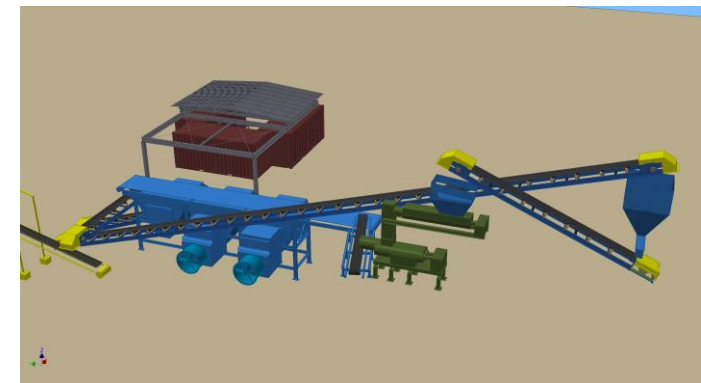
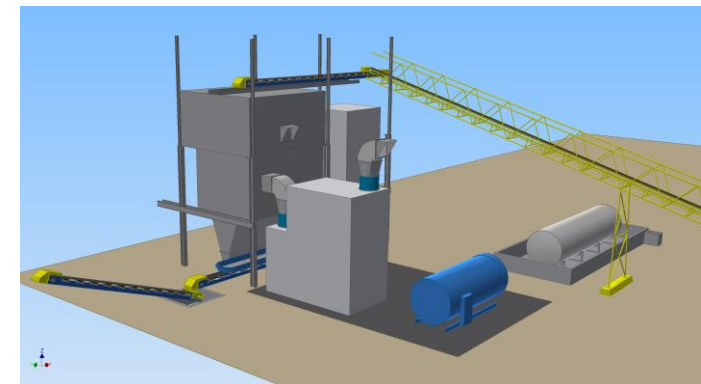
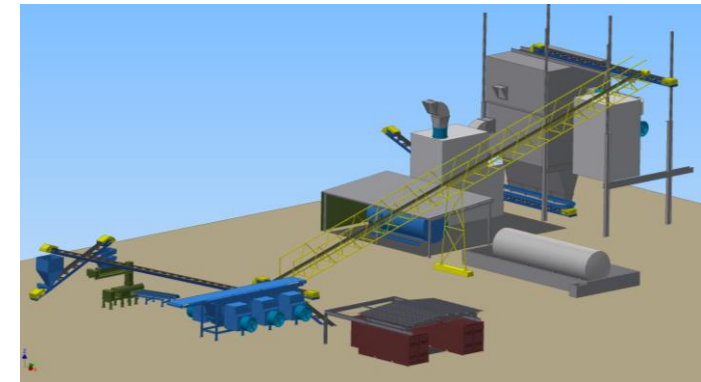
## Next Steps

Stage 3 Dec 2017 – Feb 2018

- Target Capacity Up to 25,000 tpa
- Budget ~\$1.25-1.5m
- Status: Engineering & Procurement

Stage 4 April 2018 – June 2018

- Target Capacity Up to 35,000 tpa
- Budget ~\$1.0m
- Status: Planning





## Future Use

- Innovation collaboration facility – Industry/Universities/Government
- Knowledge centre for continuous improvement of Coldry and Matmor
- Commercial Sales potential 35,000 tonnes per annum following completion of upgrades

## Strategic partnerships

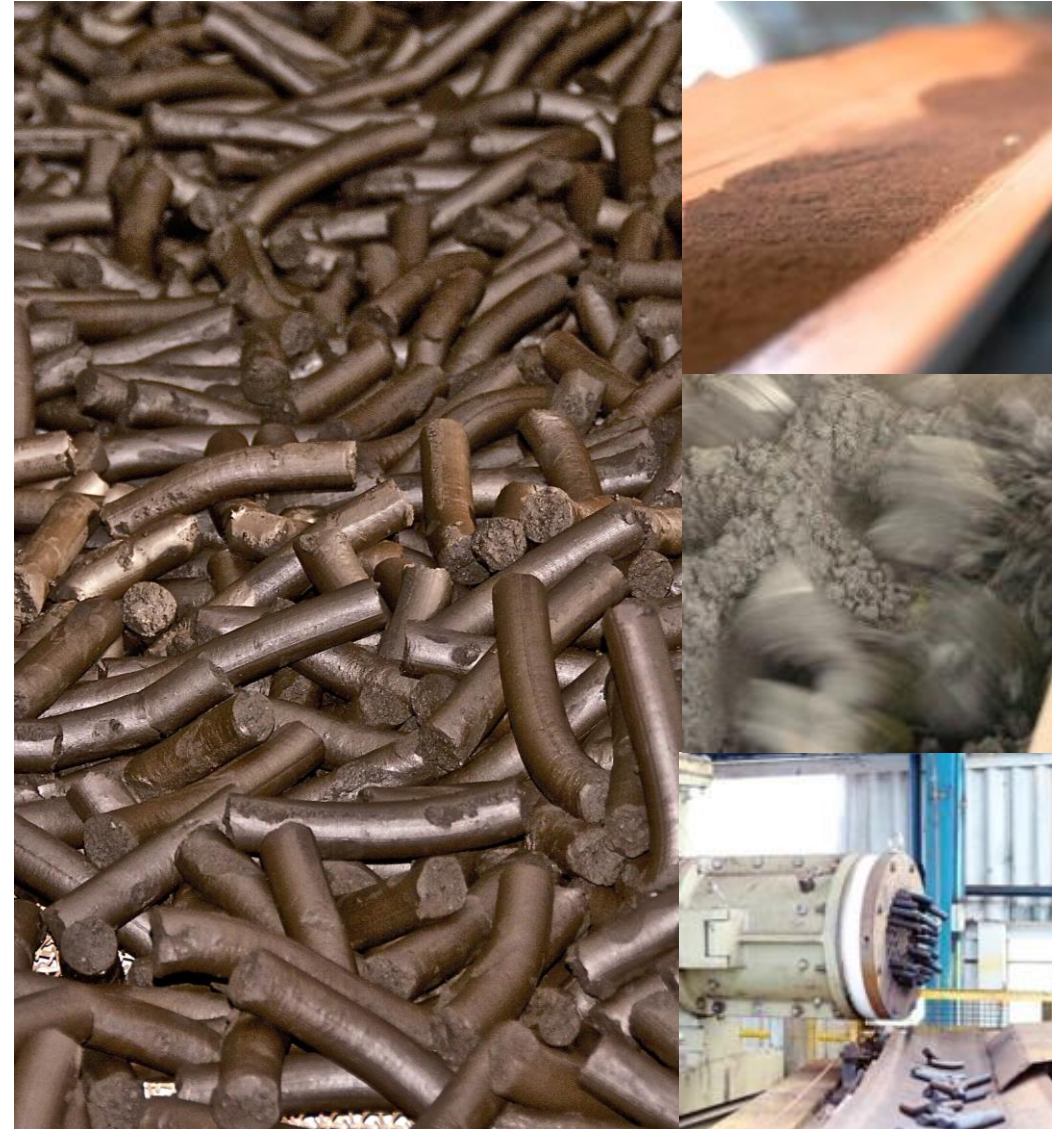
- Jepsens – sales & logistics
- Calleja Group – site & coal supply (Maddingley)
- EnergyAustralia – coal supply (Yallourn)

## Market development activity:

- 800 tonne trial at AKD Softwoods
- 3,000 tonne trial program – strategic partner collaboration

## Coldry large-scale demonstration plant

- Capacity - up to 170,000 tonnes per annum
- Solid Fuel Alternative to high priced gas
- Steering committee established
- Feasibility program commenced:
  - Scoping study and selection phase
  - Pre-feasibility study
  - Feasibility study and funding assessment





## Markets

### **Small to medium volume:**

- Consumers who need affordable utility grade heat to run their business.
- Timber, dairy and agriculture.
- Many switched to gas when the Morwell briquette plant closed, but with the increasing gas price, they need an alternative.
- Coldry is an ideal substitute and is more cost-effective than importing black coal from NSW or Queensland.

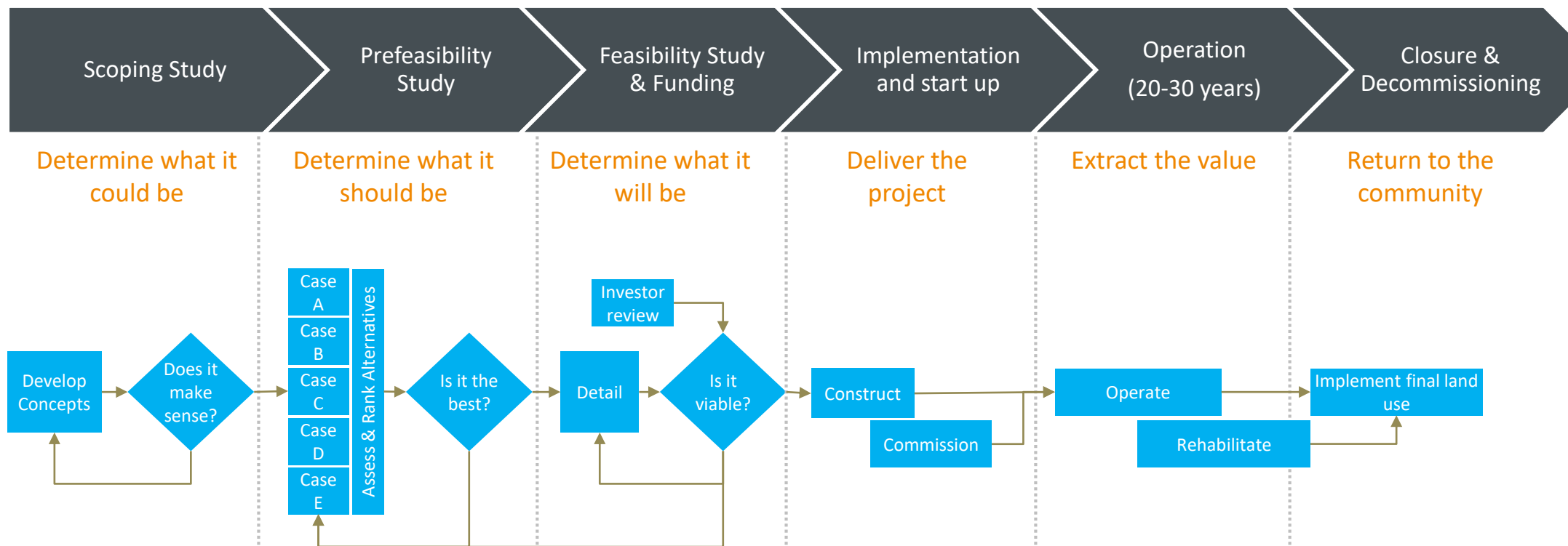
### **Large volume:**

- Large consumers such as Loy Yang power station which need an affordable fuel to restart their boilers after a shutdown.

### **High-value downstream products like:**

- PCI coal (the type used to generate heat in blast furnaces),
- Activated carbon (which has applications in water and air cleaning, food & beverage, medical and pharmaceutical industries), and;
- Hydrogen production.

## Project Pathway

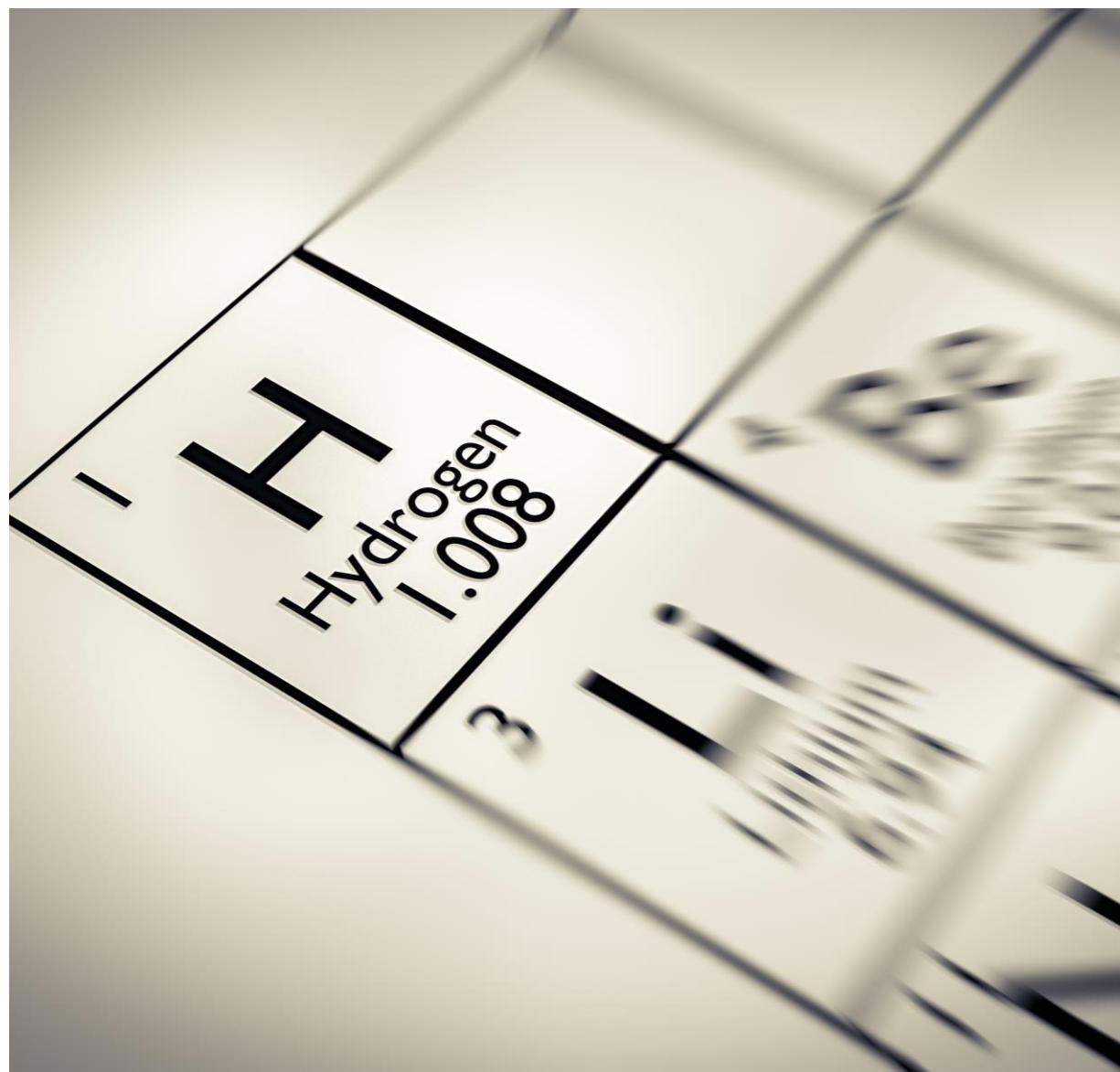


## HydroMOR:

- Provisional patent application lodged last November progressed to formal PCT application today
- Hydrogen-based
- Lower temperature
- Lower cost
- Lower CO<sub>2</sub>

## COHgen:

- Experimental activity has confirmed the increased yield of hydrogen gas from brown coal via this new process
- Provisional patent application targeted for lodgement within 6 months



## R&D Tax incentive

- Positive ruling received for the Coldry project in India
- Allows financing of 43.5% of the eligible R&D expenditure, estimated to be approx. A\$10 million
- Matmor 'Advance Finding and Overseas Ruling' application submitted and under review, results expected before EOY 2017.

## Equity Lending Facility

- Successful establishment of over \$14 million in loans
- Supported raise of ~\$4.04 million cash via options conversion

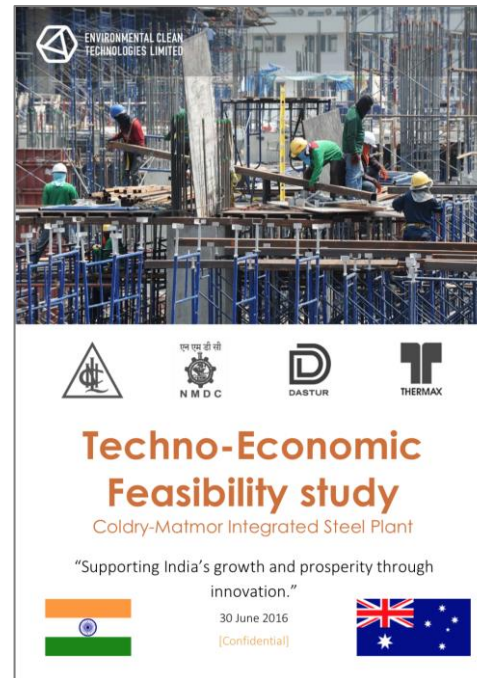
## Bonus Issue – ESIOC

- Strike 4.5c
- Expiry 31 July 2019

# Section 2: India Activity

## Overview

- TEF Study
- MPA
- NITI Aayog
- External Financial Review
- Current Status
- Path ahead





## Benefit vs Blast Furnace

Decoupling from traditional raw materials strengthens a business' resistance to inherent price volatility:

- Critical Raw material prices have moved between early and late 2016; mainly Coking coal
- Compared below is F2015/16 average (left) vs. mid October Spot (right)

### Matmor Financial Analysis

	Traditional	ECT
	BF - BOF	C/M - EAF*
	Blast Furnace - Basic Oxygen Furnace	Coldry / Matmor - EAF* + Power Generation
Case / Scenario	Base Case	Mid Case
	Crore ₹	Crore ₹
CAPEX	2,522	1,607
OPEX	969	1,002
SALES	1,264	1,307
Gross Profit	295	305
IRR (ungeared)	9.1%	17.20%
IRR (geared 30%)	7.7%	18.4%

	Traditional	ECT
	BF - BOF	C/M - EAF*
	Blast Furnace - Basic Oxygen Furnace	Coldry / Matmor - EAF* + Power Generation
Case / Scenario	Base Case	Mid Case
	Crore ₹	Crore ₹
CAPEX	2,522	1,607
OPEX	1,485	1,022
SALES	1,330	1,376
Gross Profit	-155	354
IRR (ungeared)	negative	20.00%
IRR (geared 30%)	negative	22.10%

#### Notes:

- EAF - Electric Arc Furnace
- Crore ₹ - The above table is based on the Techno-economic Feasibility Study prepared for the commercial scale project in India. Crore is 10 million and ₹ is the symbol for India's currency, the Rupee.

## Master Project Agreement

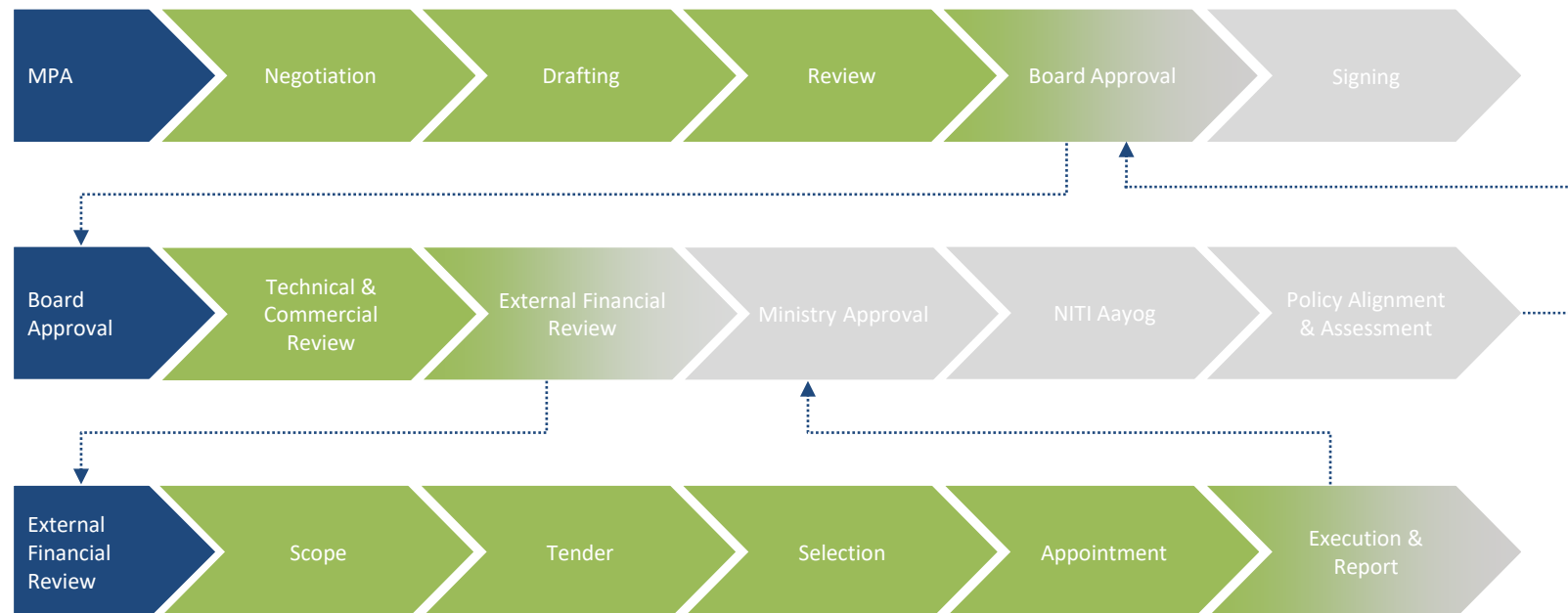
- Coldry Demonstration Plant
- Matmor Pilot Plant

In partnership with:

- NLC India – Indian Government owned lignite authority and power generator
- NMDC – Indian Government owned iron ore authority
- Located next to NLC mine and power station complex
- ~A\$30M investment
- Passed internal legal review February 2017
- Referred to NITI Aayog for review and consideration as a potential project of national interest

# India Activity: NITI Aayog

- NITI Aayog – National Institute for the Transformation of India
- Formerly; National Planning Committee
- Chaired by Prime Minister Modi
- Technical review completed prior to 30 June 2017
- Extensive support provided by Australian High Commission
- Nature and importance of the project triggered requirement for external, independent financial review, currently under way



- Program expected the draft report to be submitted yesterday or today (i.e. 21 or 22 Nov).
- ECT understands this to continue to be the case, and will confirm as soon as we have been advised by NLC.

## Financial Review:

- Complete analysis of ECT's annual financials since 2006;
- Assessment of the value invested toward the development of Coldry and Matmor;
- IP ownership, and acquisition arrangements;
- Corporate arrangements at both ECT and ECT India level;
- Investment mechanisms (current proposal being for CCD or CCPS);
- R&D incentive systems, and the resulting benefits to the project;
- Global royalty arrangements for future commercial development
- Legal compliance
- Taxation framework

- Conclusion of external review within 4 weeks of submission of draft report (due now)
- Formal presentation to NLC & NMDC by consultants
- Issue resolution & MPA amendments (if any)
- NLC submits to Ministry of Coal
- Ministry of Coal submits to NITI Aayog
- Approvals
- Board sign-off
- MPA signing
- Project activities commence





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Thank you.

