



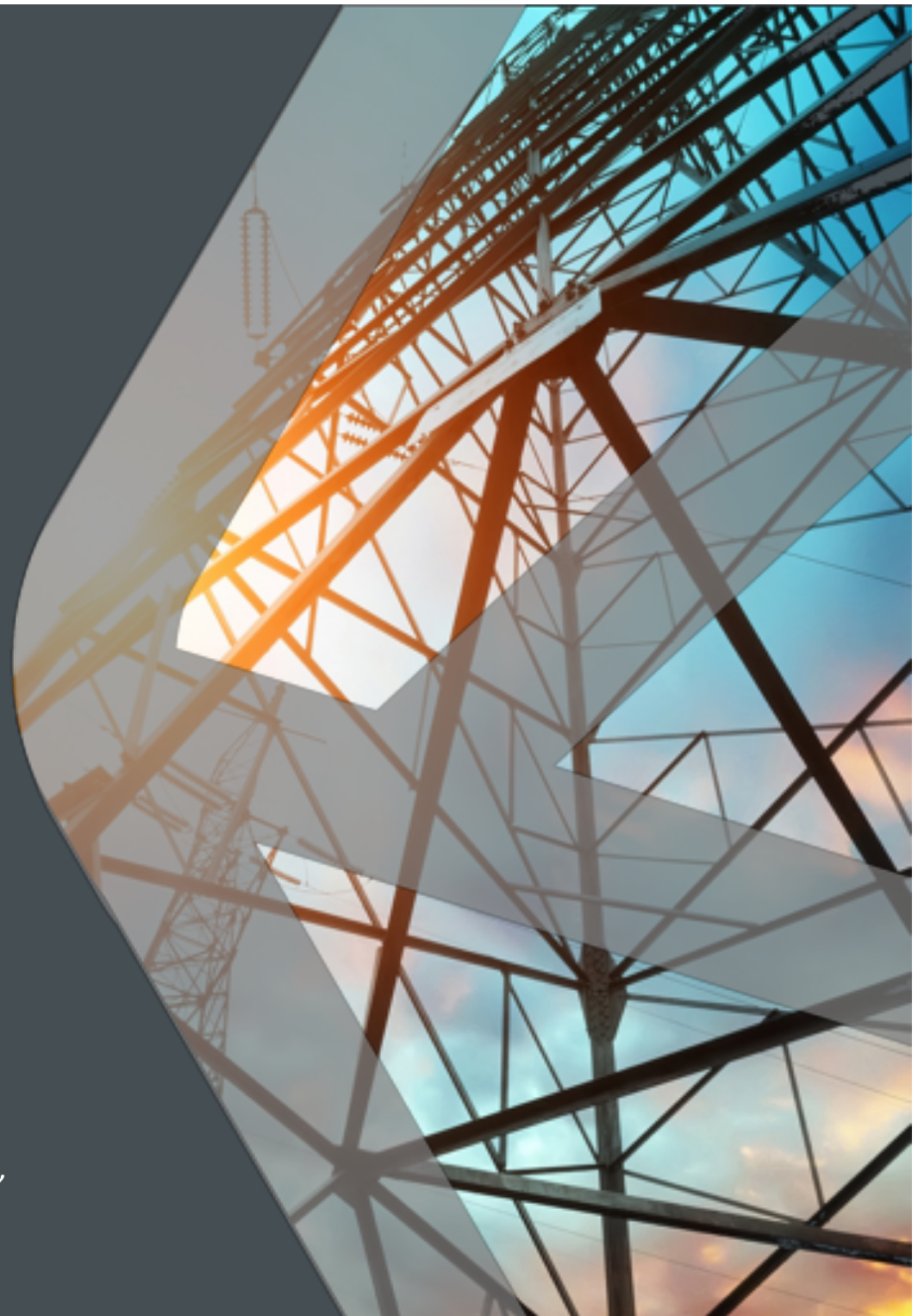
ENVIRONMENTAL CLEAN
TECHNOLOGIES LIMITED

AGM

Presentation

Friday 30 November 2018

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



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Section 1

Domestic Activity

- Organisational Structure
- Revenue Model
- Bacchus Marsh
- Latrobe Valley
- Capital Management

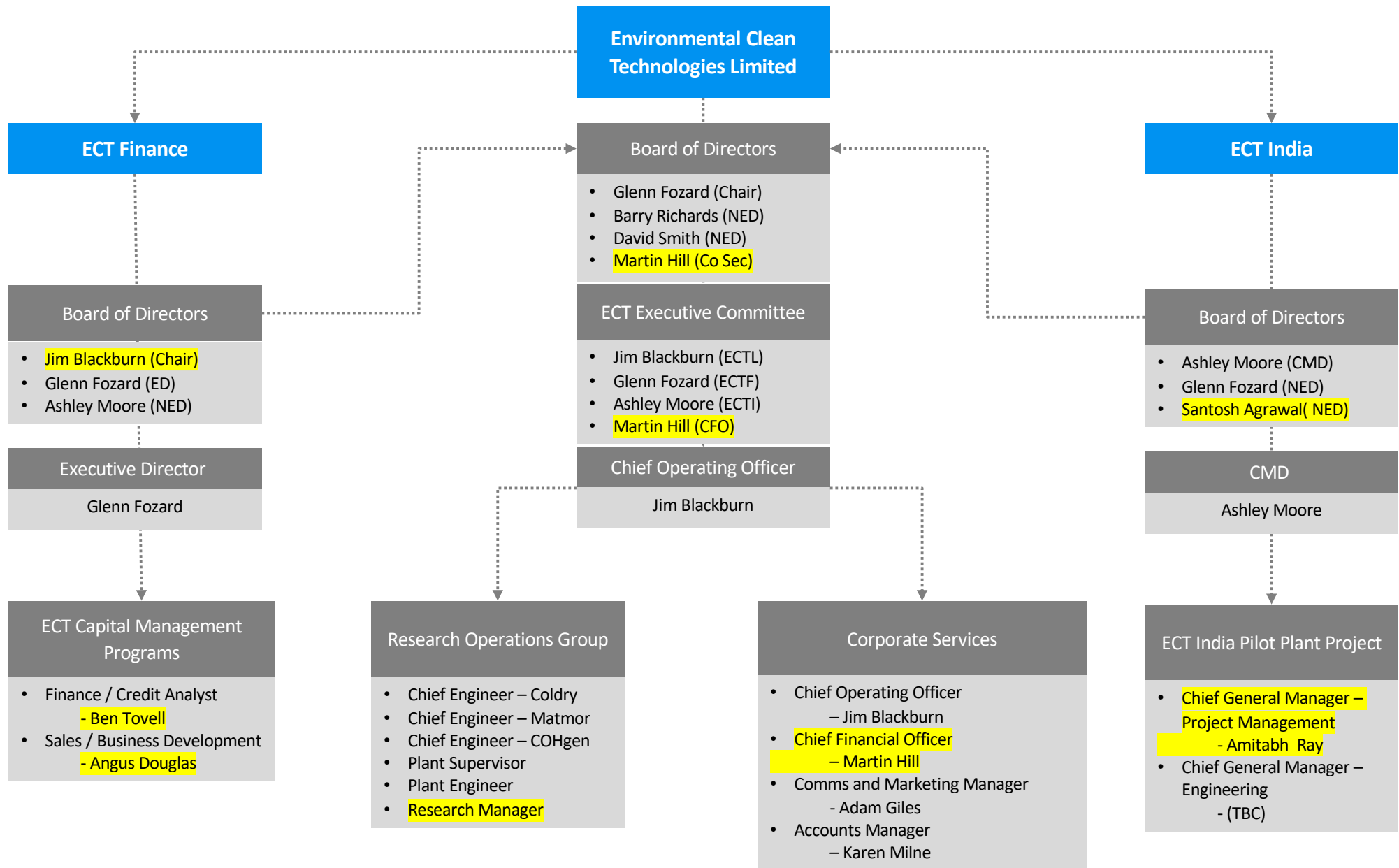


Section 2

India Activity

- Project Engineering Update
- Commercial Terms
- Research Collaboration Agreement
- Pathway ahead

Organisational Structure



Summary of Revenue Mechanisms

- Direct sales of product:
 - e.g. Coldry fuel sales into the domestic multi-feedstock boiler market)
- ECT's share of licensing fees and/or royalties from the India SPV
 - 49% ECT, 25.5% NLCIL, 25.5% NMDC
- Project development fees
 - Project engineering
 - Project management
- Original Equipment Manufacture (OEM)
 - Fees for access to supply of proprietary plant and equipment
- Investment returns
 - Enhanced balance sheet structure and access to capital, ECT to consider direct investment in operating plants.

Coldry Capacity Targets

Stage of Development	Capacity	Status
Theoretical models	NA	Achieved
Lab Scale	<10kg, batch	Achieved
Test Scale	~5 tonne, batch process	Achieved
Pilot Scale	15,000 tpa, continuous, simulated waste heat	Pending
Commercial demonstration	170,000 tpa, continuous, waste heat integration	Target
Commercial scale	600,000 tpa +	Target
Industrial scale	1.8M tpa +	Target

Matmor Capacity Targets

Stage of Development	Capacity	Status
Theoretical models	NA	Achieved
Lab Scale	<10kg, batch	Achieved
Test Scale	~40kg/h, semi-continuous	Achieved
Pilot Scale	~1 tph, continuous (India Project)	Pending
Commercial demonstration	India Plant 1 (500 ktpa, billet steel basis)	Target
Commercial scale	India Plant 2 (2.0 mtpa)	Target
Industrial scale	India Plant 3, Global Plant 4, Global Plant 5 (6.0 mtpa)	Target

High Volume Test Facility – Site development and Upgrades

- Stage 1 and Stage 2 expansion completed FY2018
- Site footprint increased by 35% to provide for program expansion (product handling, storage and equipment testing)
- Enhanced R&D capability
 - Significant investment in testing and monitoring equipment and additional R&D program management resources
 - Review and restructure of core R&D programs in line with Coldry and Matmor advanced findings and overseas rulings
- OHS&E improvements
 - Safety signage, lighting, CCTV, security fencing, training and management process improvement
- Automation enhancements
 - Digital Control interface and data capture (PLC System) upgrades and integration
- Maintenance improvements
 - Maintenance schedules updated to match increase operating scale
- Technology scale-up testing & de-risking program
 - Coldry:
 - Pilot plant operating model scale increase from 5,000 to 15,000 tpa capacity (35,000 tpa target)
 - Enhanced drying temperature and pellet conditioning testing
 - Additive trials for and infrastructure upgrades
 - Matmor – Test plant refurbishment
 - Ability to produce larger test samples for R&D trials in end applications
 - Enhanced feedstock supply capability to support Matmor Test Plant validation process

High Volume Test Facility Stage 3 & 4 Expansion

Stage 3: Dec 2018 – April 2019

- Target Capacity Up to 25,000 tpa
- Budget ~\$1.15-1.25m
- Status: Procurement & Construction

Stage 4: April 2019 – July 2019

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



Strategic partnerships:

- Calleja Group – site & transport (Maddingley)
- EnergyAustralia – coal supply and Project site partner (Yallourn)
- HiTech (QLD) and John Thompson Boilers – boiler package equipment supplier and installation
- Jepsens – 3rd party logistics
- Mecrus – steam package operations and maintenance

Market development activity:

- | | |
|---|----------------|
| • 800 tonne trial at AKD Softwoods | Completed |
| • Gippsland Abattoir trial program | Completed |
| • Tasmania food processor trial program | Completed |
| • Victorian food processor trial program | Completed |
| • First steam boiler package client (Gippsland) | Ongoing supply |
| • First fuel supply client (Tasmania) | Ongoing supply |

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:

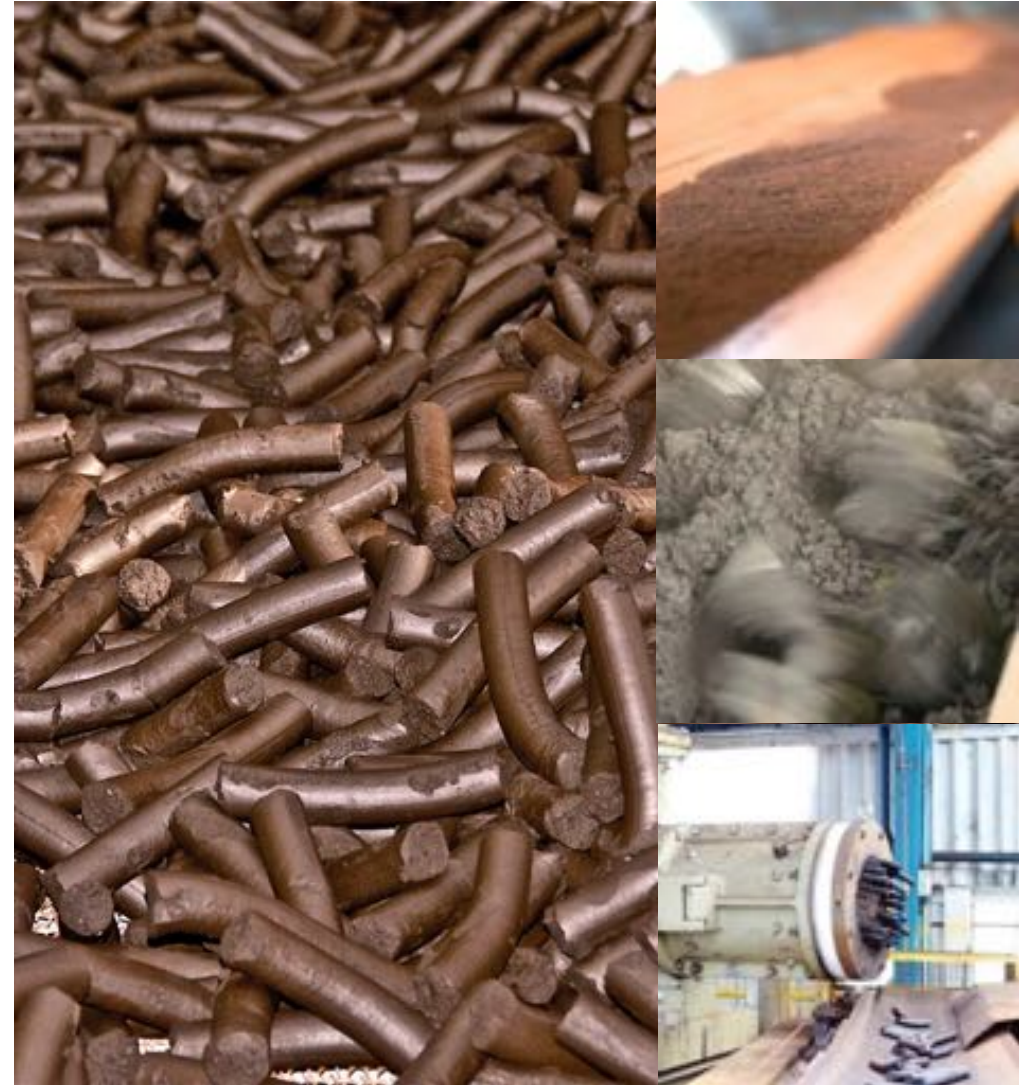
- Large consumers such as Loy Yang power station which need an affordable fuel to restart their boilers after a shutdown.

High-value downstream products like:

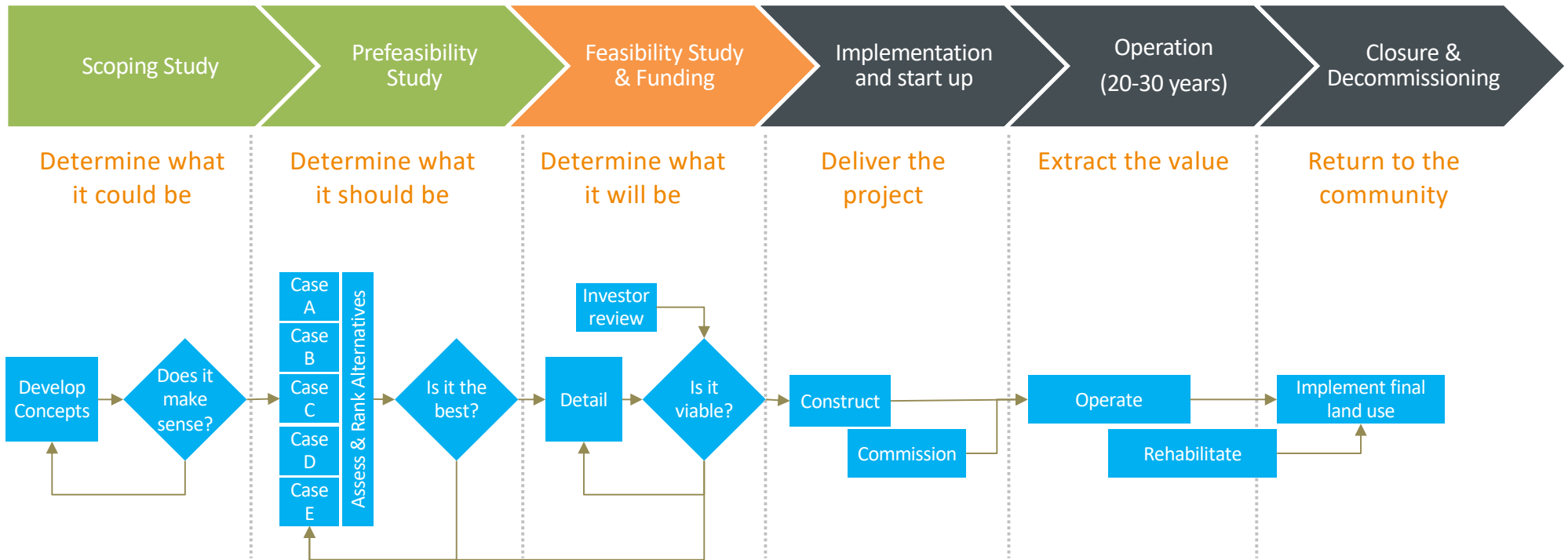
- PCI coal (the type used to generate heat in blast furnaces),
- Activated carbon (which has applications in water and air cleaning, food & beverage, medical and pharmaceutical industries), and;
- Hydrogen production.

Coldry large-scale demonstration plant

- Capacity - up to 600,000 tonnes per annum
- Feed material for high value conversion process
- Pre-Feasibility program completed:
 - Scoping study and selection phase
 - Economic Modelling
 - Market Study
- Feasibility program commenced:
 - Logistics and transport planning
 - Product specification testing for export grade
 - Site specific planning



Project Pathway



R&D Tax incentive

- Positive ruling received for the Coldry project in India
- Matmor 'Advance Finding and Overseas Ruling' application submitted and under review, results expected Q3 FY18.
- Allows financing of 43.5% of the eligible R&D expenditure, estimated to be approx. A\$10 million

Equity Lending Facility

- Successful establishment of over \$14 million in loans
- Supported raise of ~\$4.04 million cash via options conversion
- Generated >\$1M in cash repayments to ECT

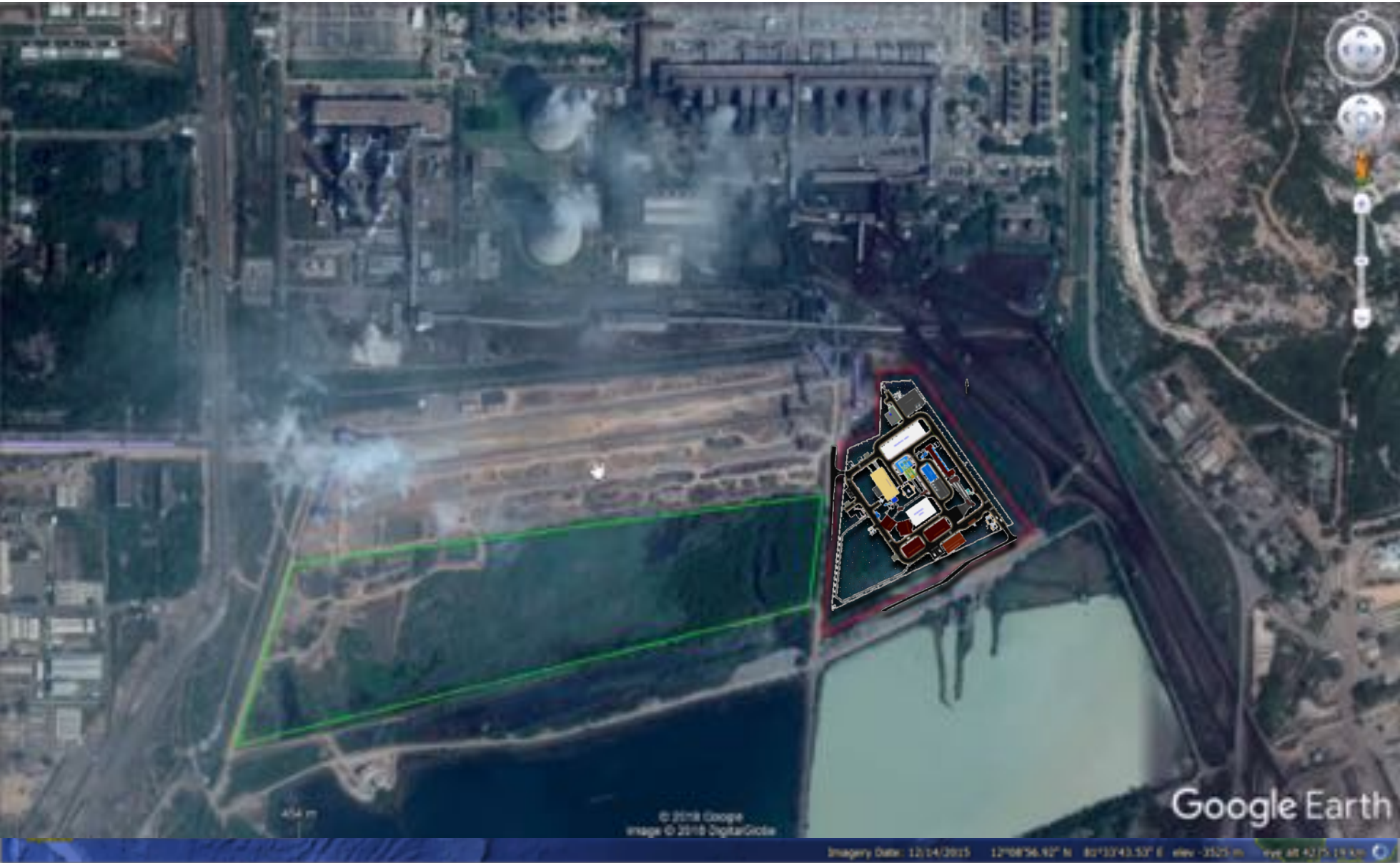
Section 2: India Activity

Overview

- Project Engineering Update
- Commercial terms
- Research Collaboration Agreement
- Project Pathway



Project Location – Tamil Nadu – Neyveli



- Process Flow Diagram
 - Block diagram
 - Materials balance
 - Reaction modelling / Energy balance
- Equipment Selection
 - Options analysis & selection
 - Specification development
- Electrical Systems
 - Power consumption analysis
 - Transformers & Distribution
 - Single line diagram
- Piping & Instrumentation Diagram
 - Process control assessment
 - Instrumentation identification
 - Process automation review
 - Shutdown & trip management
- Site Layout
 - Building identification
 - Process layout
 - 3D arrangement
- Schedule
 - Program overview
 - Detailed design assessment
 - Construction assessment
 - Capital expense estimate
 - 'Long lead' identification
 - Engineering discipline review by area

Fly-through of 3D layout – Integrated Pilot Plant

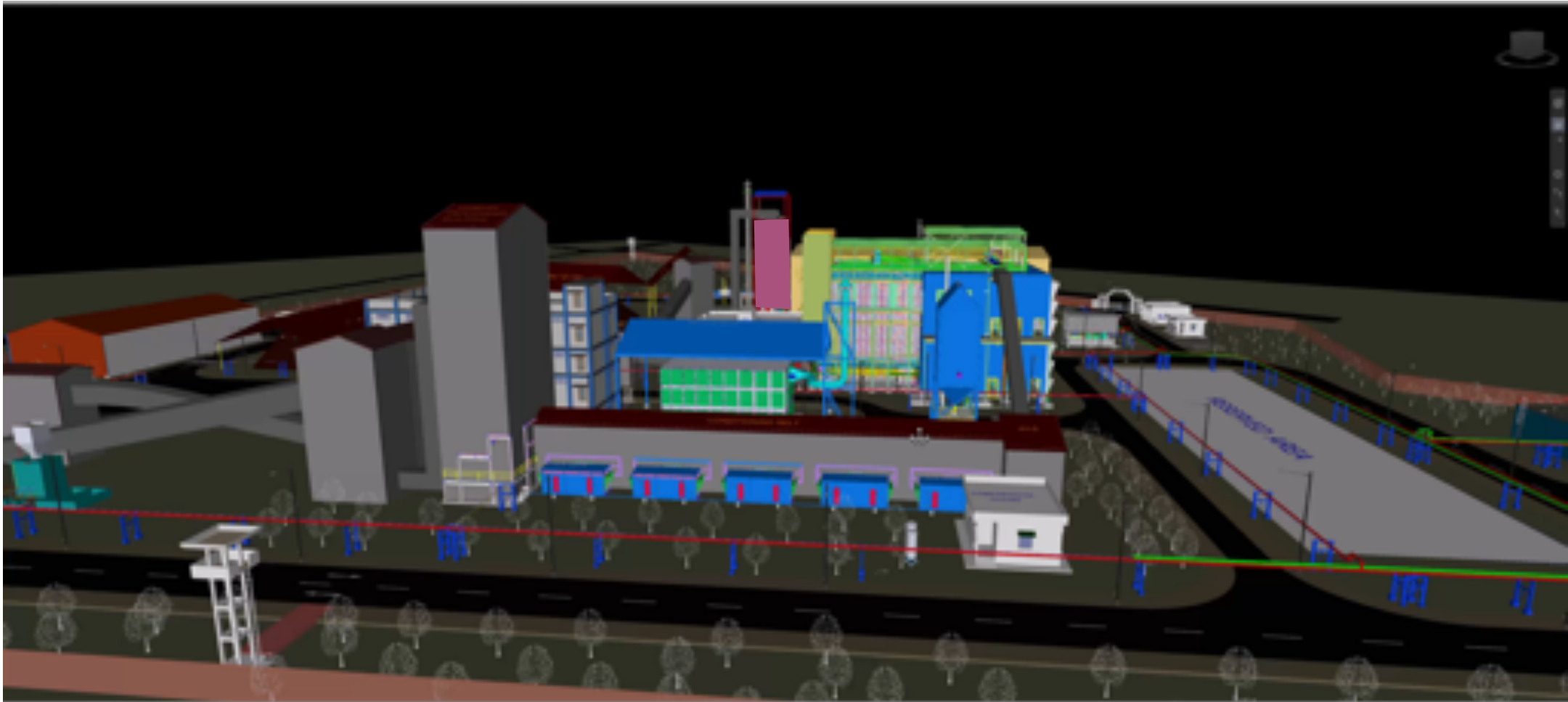


Raw material stockpiles
Crushing & handling

Primary Processing Building
Shift hoppers, milling & extruding

Conditioning Belt
Conditioning fan boxes

Fly-through of 3D layout – Integrated Pilot Plant

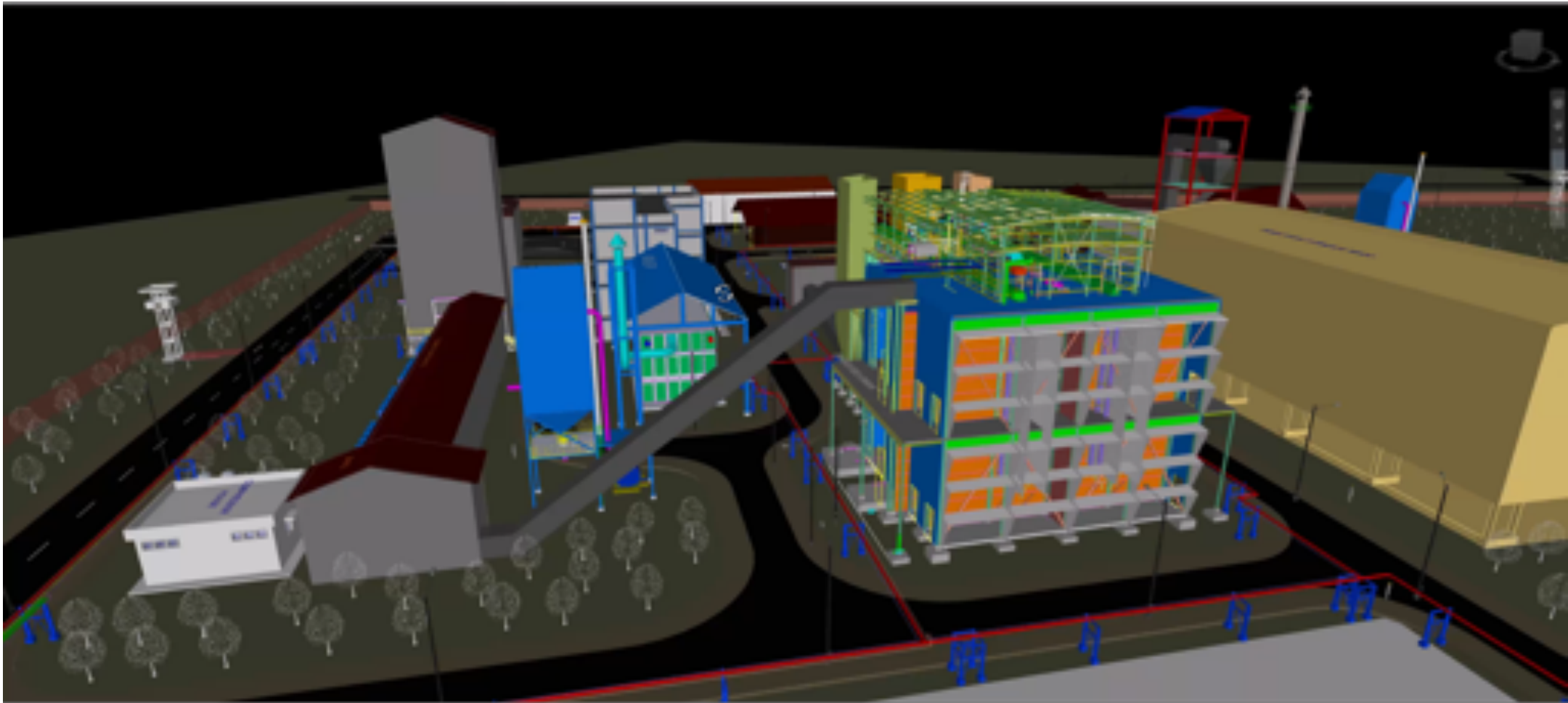


Control room & MCC
Aux heating systems
Incoming HV

Packed Bed Dryer
PBD Fan boxes & heat exchangers

Moist pellet distribution conveyors
PBD exhaust stacks

Fly-through of 3D layout – Integrated Pilot Plant

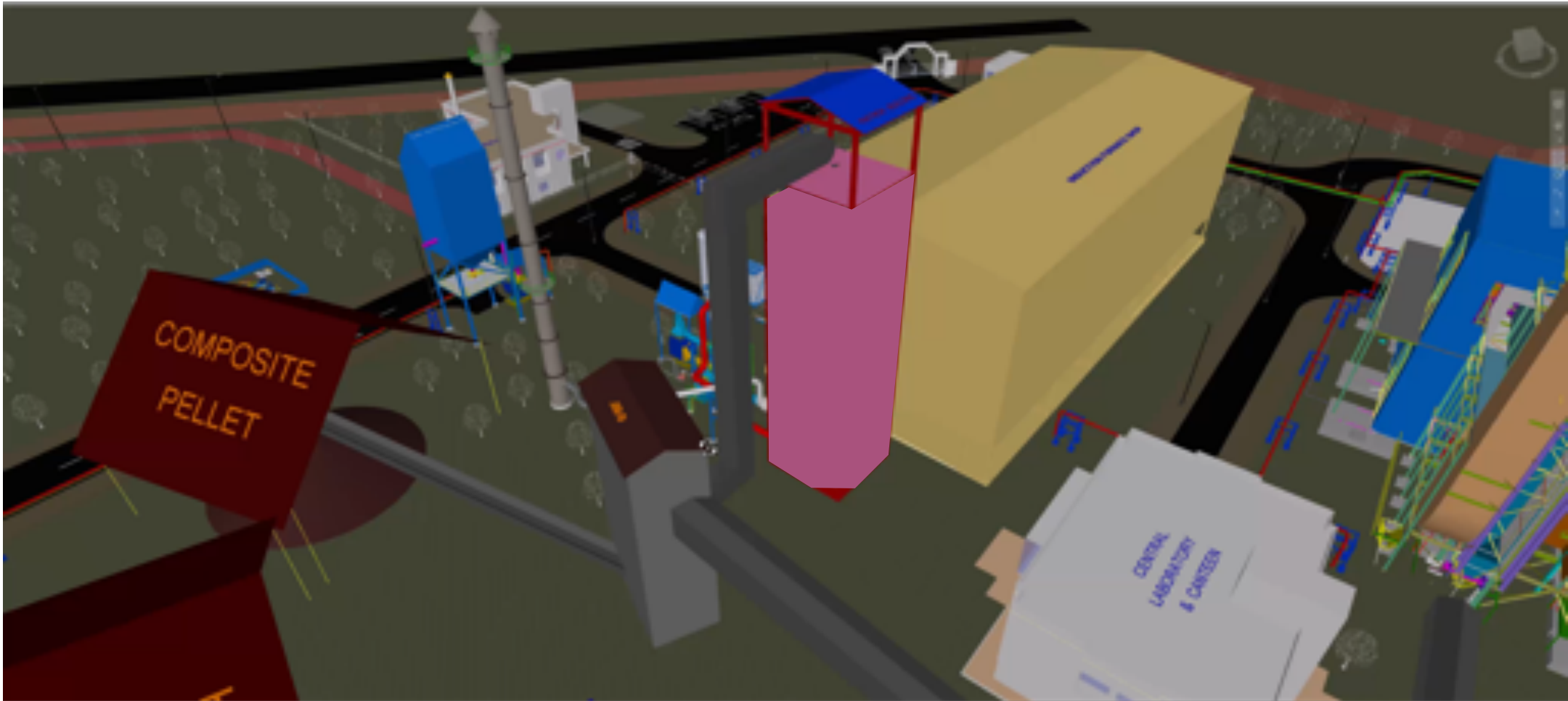


PBD discharge conveyors
Pellet conveyors to retort & stockpile

Lab & lunchroom

Matmor retort
Melt shop (Induction furnace)

Fly-through of 3D layout – Integrated Pilot Plant



Retort
Offgas combustor
Offgas heat exchanger

Exhaust stack

Nitrogen system
MCC

Benefits vs Other Ironmaking Processes

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

TEF Study basis:
2015/6 average RM costs & Sales prices

	Traditional	Indian Alt	ECT
	BF - BOF	CB DRI - EAF	C/M - EAF
	Blast Furnace - Basic Oxygen Furnace	DRI Kiln – EAF	Coldry / Matmor - EAF + Power Generation
Case / Scenario	Base Case	Base Case	Mid Case
CAPEX (Index)	100%	90%	64%
OPEX (Index)	100%	123%	103%
SALES (Index)	100%	108%	103%
ROI (index)	100%	70%	160%

Inherent strength – Lower Capex, plus ability to use lower cost raw materials:

- Coking coal (~\$US 85 FOB)
- Non-coking coal (~\$55 FOB)

TEF model updated using
2018 Sep RM costs & Sales prices

	Traditional	Indian Alt	ECT
	BF - BOF	CB DRI - EAF	C/M - EAF
	Blast Furnace - Basic Oxygen Furnace	DRI Kiln – EAF	Coldry / Matmor - EAF + Power Generation
Case / Scenario	Base Case	Base Case	Mid Case
CAPEX (Index)	100%	90%	64%
OPEX (Index)	100%	106%	86%
SALES (Index)	100%	109%	104%
ROI (index)	100%	130%	250%

2018 current pricing:

- Coking coal >100% increase
- Non-coking coal >25% increase
- Lignite flat pricing
- Fe Ore fines ~flat
- Steel >30% increase

Commercial terms:

- Research and development collaboration (R&D collaboration) -unincorporated association governed by the terms of the RCA
- The participating interests in the R&D collaboration (and subsequent SPV)
 - NLCIL: 25.5%
 - NMDC: 25.5%
 - ECT: 49%
- A special purpose vehicle (SPV) will be established
 - the earlier of:
 - Final Project Completion,
 - any registrable project IP
 - as mutually agreed between the parties
- Establishment of the SPV,
 - all project IP and assets transferred and assigned to the SPV,
 - SPV will become a party to the RCA.
- Project Control Committee (PCC):
 - NLCIL – 2 representatives
 - NMDC – 2 representatives
 - ECT – 3 representatives

Commercial terms:

- NLCIL:
 - Fund 50% capital expenditure (~INR75 Crore or ~AUD15M)
 - Fund 25.5% operating expenditure (~INR6.9 Crore or ~AUD1.4M)
 - Fund 25.5% of any additional budget (CAPEX & OPEX)
- NMDC
 - Fund 50% capital expenditure (~INR75 Crore or ~AUD15M)
 - Fund 25.5% operating expenditure (~INR6.9 Crore or ~AUD1.4M)
 - Fund 25.5% of any additional budget (CAPEX & OPEX)
- ECT:
 - Fund 49% operating expenditure (~INR13.2 Crore or ~AUD2.6M) (CP- Coldry Australia, PCC, Board Approvals)
 - Fund 49% of any additional budget (CAPEX & OPEX)
 - Project bond of ~AUD3.5M or 10% of the PCC approved capital budget,
 - Master Technology License:
 - Exclusive royalty-free global licence during R&D phase
 - Transition to a commercial license when SPV created
 - SPV to issue sub-license - Global Royalty Share Structure
 - Pre-existing IP – remains owned wholly by ECT
 - Project IP – owned by the R&D collaboration/SPV
 - New IP (in the future) – owned in proportion to funding contributions
 - Commercial Technology License (Australia):
 - ECT will retain the right to license its pre-existing Coldry IP, in Australia
 - All royalty income shared through SPV

Research Collaboration Agreement:

- Commercial Terms
- Master License
- Services Agreements
 - NLCIL
 - NMDC
 - ECT
- Legal / Compliance terms and conditions

India Activity: Project Pathway



- Tripartite Agreement Completed
- Techno-Economic Feasibility study Completed
- External Legal / Financial Due Diligence (1) Completed
- Memorandum of Understanding Completed
- Basic Engineering Report (Dastur) Completed
- External Legal / Financial Due Diligence (1) Completed
- NLCIL Board Approvals Completed
- NMDC Board Approvals Pending
- Presentation to Government (MOC, MOS) Planning
- Signing Ceremony Planning
- Financial Close Planning



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Thank you.

