ENVIRONMENTAL CLEAN TECHNOLOGIES LIMITED

Shareholder Update – Local Activity

24 December 2020: Environmental Clean Technologies Limited (ASX: ECT) (ECT or Company) is pleased to provide the following general update on local activities.

Key points:

- Coldry upgrade project – enabling a modern char manufacturing process
- Ongoing impact of COVID-19 on project schedule:
    - Shipping delays on some overseas-sourced equipment due to COVID-19 related issues
    - Project schedule extended from October to December 2021 to reflect and accommodate COVID-19 impacts
- Capital Management Update

Coldry Upgrade Project

Enabling a modern, low-emission char manufacturing process

The Coldry upgrade project is poised to modernise lignite-based char manufacturing, allowing both the (natural gas-equivalent emission) production of char and paving the way for net zero-emission production of solid fuel (Coldry pellets).

Comprised of the scale-up the Company's Coldry process and the addition of new char plant and equipment, the Coldry upgrade project entered the construction phase in late October 2020 (see announcement 21 October 2020).

These project activities are focused on the delivery of two key objectives:

- **Engineering Scale-Up** - Advancing Coldry technical development via an engineering scale-up featuring an increase in throughput (up to ~3.5x current capacity) and reducing the plant's physical footprint by approximately half (compared to the previous Coldry pilot facility).
    - **Aiming to:**
        - Reduce scale-up risk for a future large-scale commercial demonstration plant (350,000 tpa+)
        - Refine commercial-scale plant design
        - Generate sufficient design and operational data to support bankable feasibility study and planning for the commercial-scale plant
- **Commercial Demonstration –** Small-scale commercial demonstration of the Coldry process integrated with a downstream application (char manufacture).
    - **Aiming to:**
        - Deliver up to $2.5 million a year of operating project cashflow from target revenues of approximately $6 million
        - Demonstrate Coldry as a gateway to higher-value downstream applications
        - Demonstrate Coldry as a net zero-emission drying technology and enabler of low-emissions downstream applications (natural gas equivalent or less)
        - Support continued development of **HydroMOR** (low emission steel making) and **COHgen** (low emission hydrogen production).

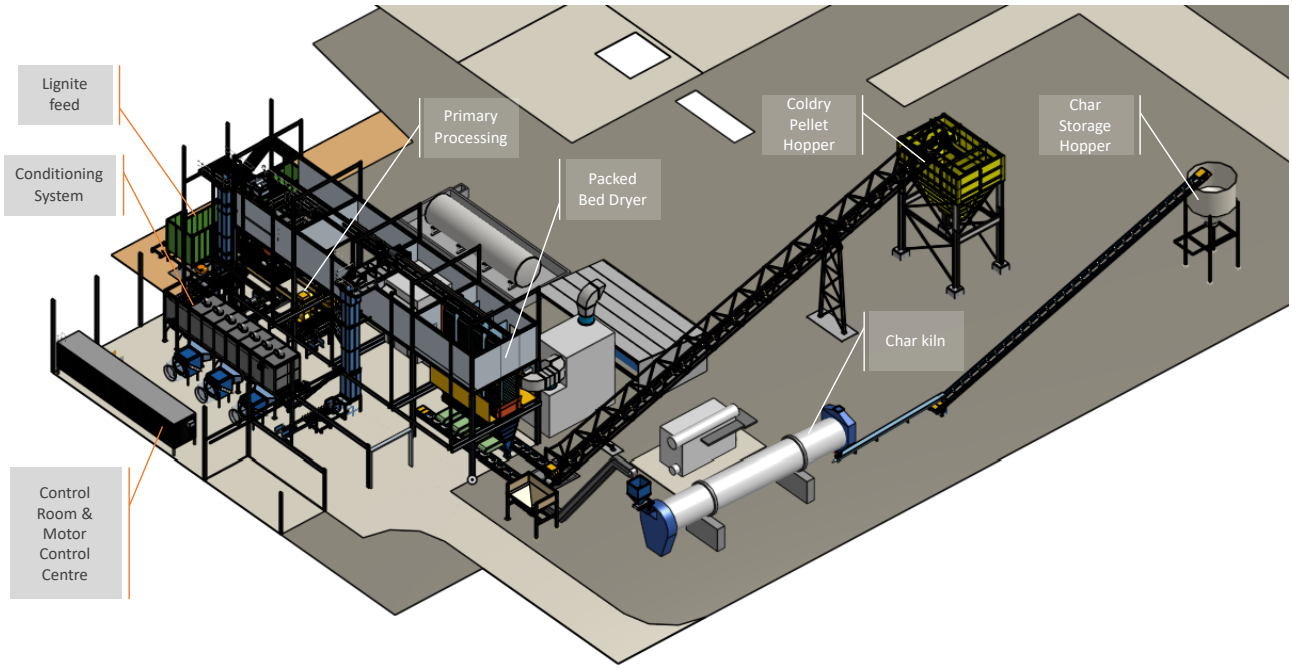


Image (above): layout design of the small-scale Coldry commercial demonstration plant currently under construction

On 27 October 2020 the Company outlined the status of its Coldry upgrade project, noting:

- ✓ The completion of the site layout and basic design
- ✓ Site preparation works commenced
- ✓ Process tender packages issued

As part of this announcement, the Company also provided an outline of the targeted project timeline (below), updated to reflect the impact of COVID-19, and noting the following steps scheduled from October through to the end of December 2020:

Description	Status
Clearing the interior of the existing building ahead of installation	Complete
Design of support structures	Complete
Fabrication & installation of support structures	In progress
Process tender's packages concluded, vendors appointed, fabrication substantially complete, with container loads either in transit, being loaded or scheduled for despatch over coming weeks	In progress
New motor control centre & control room (system automation & diagnostics)	In progress
Conditioning system fabrication, installation and testing	In progress
Construction of 'all shelter' for coverage of coal supply, incorporating workshop & laboratory facilities	Complete
Electrical and process instrumentation and cabling	In progress
Isolated commissioning and testing of new mixer, mill and extruder ahead of integration into the support structures	Pending

Target Timeline

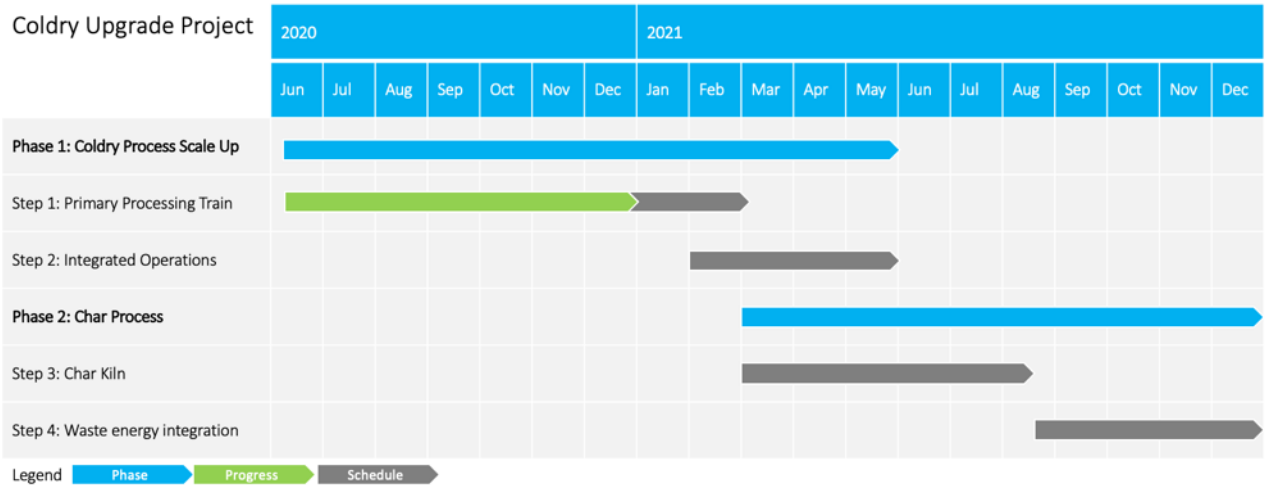
The project is divided into two phases:

Phase 1 – Coldry process scale-up:

- Design, construction, installation and individual commissioning of each key stage of the process, including primary processing train, conditioning system and drying system
- Integration of the plant and equipment across each key stage of the process to establish continuous, steady-state operations

Phase 2 – Char process integration:

- Design, procurement, installation and individual commissioning of the char kiln
- Integration of the char kiln with the Coldry process to establish continuous, steady-state operations and waste energy utilisation for drying



By phasing the project in this manner, the Company seeks to mitigate the unpredictable risks associated with the impact of COVID-19, and the well-understood risks related to the scale-up and commercialisation of new technologies. As such, expenditure is limited to the amount needed to reduce each phase's risk before proceeding to the next phase with increased technical and financial confidence.

Activity – November & December

Following the commencement of the full construction phase in late October 2020, the team has delivered outcomes, broadly in line with the schedule, including:

Build of Raw Coal Storage, Workshop and Laboratory

Status: 80% Complete

Overview:

- Relocation of old 'All Shelter' and construction of new, double-stacked enclosed raw coal storage
- Customised 40ft containers to act as a new undercover workshop and clean laboratory
- Electrical installation of lighting, points and power supply to be completed in early January

Photos:



Photos (above): installation of the All Shelter structures designed to house the raw lignite, workshop and laboratory.

Preparation of the existing building ahead of the installation of new equipment

Status: 85% Complete

Overview:

- Removal of asbestos cladding
- Removal and storage of HydroMOR equipment
- Isolation and removal of electrical cabling
- Removal and relocation of old silos
- Erection of internal divider wall

Still to be completed:

- Floor levelling
- Sub-floor management of sump water and load support
- Roof repair

Photos:


Photos (above): Before (left) and after (right) the asbestos cladding removal.


Photos (above): HydroMOR test plant (left) removed and placed in storage to make way for the Coldry primary processing train.


Photos (above): Legacy silos adjacent to the main building (left) being removed (right). One of the silos will be refurbished and repurposed for char storage & packing.

Photo (above): installation of a permanent partition wall to replace the temporary fencing that previously separated the plant area from the neighbouring tenant

Civil Works – Concreting

Status: 100% Completed

Overview:

Following the truck entranceway and concrete hardstand levelling late October (below, left), the building entranceway has also been completed (below, right).

Photos:

Support structures

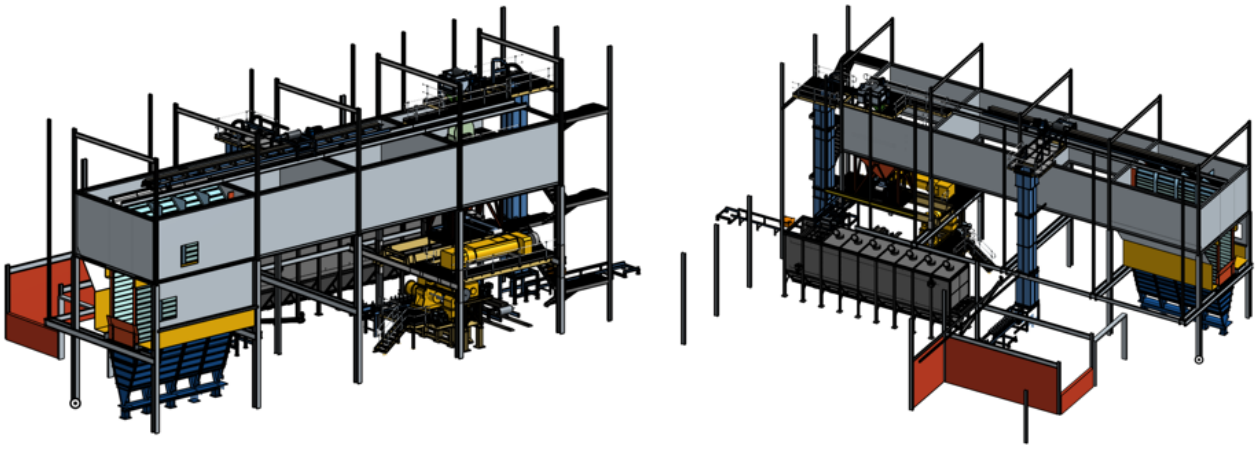
Status: Design complete, fabrication underway, installation scheduled

Overview:

Following the completion of the design for 'off-the-shelf' equipment (conveyors, hammer mill, etc.) and in-house design of the proprietary conditioning system, and the layout of the components within the building structure, the requirements for platforms, structural supports and access ways have also been completed.

Fabrication is currently in progress, with installation scheduled during January 2021, ahead of equipment mounting and cabling.

Photos:



Diagrams (above): plant design featuring support structures.

Heat system upgrades

Status: 50% Completed – on schedule – due by Jan 2021

Overview:

Significant upgrades have been planned for the existing hot water system to optimise operation—upgrades target reliability, capacity and control system integration.

Holding tanks, centrifuge and other equipment have been completed and await plumbing and electricals before installation.

The heating system simulates 'waste' heat for demonstration purposes initially, facilitating the commissioning of the Coldry process train, then will transition to a backup role following the installation of the syngas-fired boiler system included as part of the Phase 2 char process train set-up.

Photos:

Photos (above): Centrifuge (left) and holding tanks (right).

New electrical & process control room (system automation & diagnostics)

Status: In progress and on schedule

Overview: All process drives have been specified. Electrical supply requirements for the site have been determined and grouped into logical banks, and within the limitations imposed by the site supply structure. Physical layout configuration has been developed, and a suitable structure (room) is designed, incorporating the PLC's (programmable logic controllers), control systems and operator terminals. Electrical distribution, protection, isolation and controls have been designed and are in the process of assembly.

Conditioning system fabrication, installation and testing

Status: Delayed (due to shipping delays on the belting)

Overview: Design, sourcing and selection of the belting system - a vital component of the conditioning system - was completed on schedule; however, shipping delays have impacted the program.

International sea freight is slowly recovering from shipping capacity withdrawal due to COVID-19 (meaning increased costs, port congestion and delays).

Design of the system has proceeded well, recently advancing to the fabrication stage.

Photos:

Photos (above): the conditioning belt, an integral component of the proprietary conditioning system, has been fabricated and shipped. Arrival on site is expected early January 2021.

Electrical and process instrumentation and cabling

Status: In progress & on schedule

Overview: Very much related to the motor control centre (MCC) portion of the project, this section connects the field equipment to the motor control centre supply for each drive. Cables are laid in trays, the routes for which were determined to integrate with the structural designs and working platform layouts, and with a view to not impeding operations or maintenance into the future. Cable trays are now being laid and will continue to completion as the structure installation is completed. Laying of cables within the trays will commence into next year, and – as usual – is one of the last items for completion ahead of commissioning commencement.

ECT Supporting Local Manufacturing

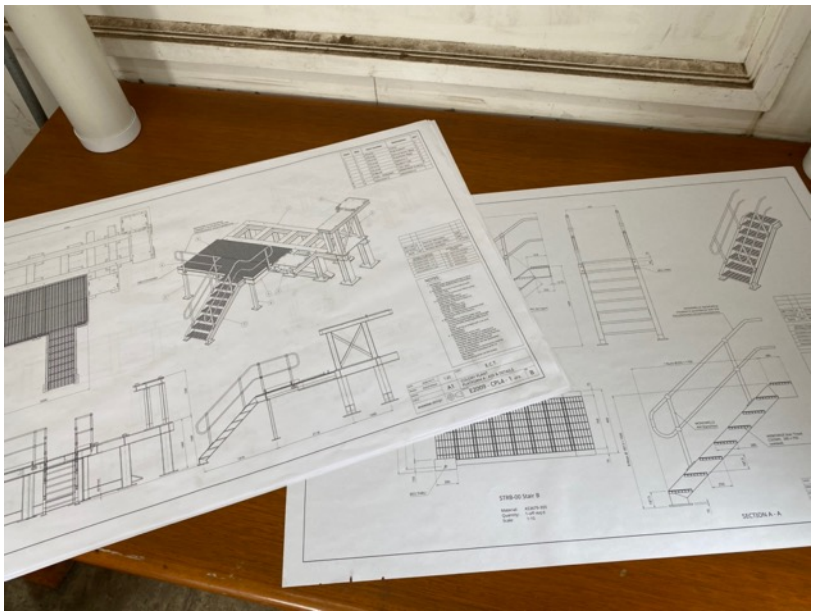
In July, the growing uncertainty created by the COVID19 pandemic drove the Company to reconsider the value proposition of overseas manufacturing.

Whilst overseas manufacturers and vendors demonstrated a pricing advantage, other factors including delivery schedules, currency volatility and sovereign risks (like the trade sanctions we're seeing in China) steered ECT toward local Australian fabricators for a range of critical items.

Over time, this has proven to be a prudent decision, particularly for items that either are of proprietary design (like the conditioning box) or are items that comprise an early part of the critical pathways (like structure supports).

The higher cost of local manufacturing is outweighed in this case by the benefit of greater control over intellectual property, vendor responsiveness, ease of communication, faster fulfilment times and quality control.

ECT is pleased to be supporting local businesses, especially as our economy recovers from COVID19 and business grapples with new challenges such as the China trade war.



Photos (above): Local design and fabrication of the structural supports, ready for installation.

Next Steps

- New motor & process control room (system automation & diagnostics)
- Conditioning system fabrication, installation and testing
- Completion of workshop & laboratory facilities
- Electrical and process instrumentation and cabling
- Structure & platforms – fabrication completion
- Structure & platforms – installation

- Packed Bed Dryer – removal of internals/replacement with new designs
- Equipment installations and cabling up
- Instrumentation installation
- Commissioning preparation, dry runs & first operations

Chief Engineer, Mr Ashley Moore, commented: “Despite the extremely challenging conditions presented by COVID-19, including shipping delays throughout the Asia region, we’ve managed to limit the impact to our project schedule through the reprioritisation of on-site activities within our control.”

ECT Chairman Glenn Fozard added, “We are pleased with the progress over the last eight weeks, although frustrated by the shipping delays. The Company will take a short break for Christmas then be back into full swing from 4 January. We hope all of our staff, shareholders, and stakeholders have a safe and enjoyable break, and we look forward to seeing and hearing from you all again into the new year.

“Successful completion of this small-scale commercial demonstration is part of our broader commercialisation strategy, which involves the further potential scale-up of our Coldry process in Victoria’s Latrobe Valley, supporting the higher value, lower emission utilisation of lignite via a range of downstream applications, including solid fuel, liquid fuel and hydrogen production.”

The Company looks forward to providing further updates as the project progresses and to its Annual general Meeting on 15 January 2021.

About Char

The Company has identified the high-value char market as the ideal candidate application for the small-scale commercial demonstration of its unique Coldry technology.

Char is a well-established product in the Australian market as a barbecue fuel and metals reductant.

Char is also used to make ‘activated carbon’ products for use in filtration applications.

What is char?

Simply, char is ‘partially burned’ biomass produced using a process called ‘pyrolysis’.

That biomass is typically wood or coal.

The key is to heat the raw material in the absence of oxygen, avoid combustion, remove most of the moisture and ‘volatile’ components, and leave the remaining carbon in place.

The result is an active carbon material, which is useful in several applications.

The volatile matter is turned in to ‘gas’ along with the moisture, forming a “synthesis gas”, or syn-gas that can be used to provide heat.

Waste energy from the char kiln will be harnessed and utilised to provide the drying energy for the Coldry process.

Modernising the old char manufacturing process for lignite-based coal

Char made from lignite, also known as brown coal, is well established.

Unlike char made from black coal, lignite-based char requires drying first.

Drying is easy. Drying efficiently, cost-effectively and with net zero-emissions, however, has proved elusive until now.

The dominant lignite drying method has been steam tube drying, which involves high heat and high pressure. Unfortunately, coal is burned to generate the steam needed to dry the coal, resulting in increased CO_2 emissions.

Coldry can achieve low temperature, low pressure, low cost drying through a unique combination of:

1. Brown coal densification (BCD)
2. Waste heat utilisation

BCD is a physical and chemical phenomenon exhibited by a range of high-moisture coals that results in the expulsion of moisture and densification of the remaining coal solids.

The Coldry technology process involves several process stages:

1. Mechanical Shearing: The majority of the physically trapped moisture is released via destruction of the porous structure of the coal, which is achieved via mechanical shearing, resulting in a coal slurry of suitable consistency for extrusion.
2. Extrusion: The slurry is extruded to produce pellets of optimal dimension for subsequent drying.
3. Drying: Ideally, waste energy from a co-located power station (or another low-grade 'waste' energy source) is utilised to cost-effectively evaporate the mobilised water within the pellets, delivering a finished product with less than 15% moisture.

The Coldry process has impressive benefits in comparison to the traditional drying processes, including;

- No direct gaseous emissions (including CO_2, NO_x, and SO_x);
- Significant energy uplift compared to the raw lignite (8MJ/kg > 22MJ/kg);
- Thermally stable finished product, with reduced spontaneous combustion profile;
- Where commercially desirable, there is also the option to harvest evaporated moisture.

By converting high moisture, low calorific value lignite from a low-value material with limited usage opportunities into a high energy, low moisture, transportable solid fuel, Coldry opens up new markets and a wide range of applications. It also reduces the CO2 emissions intensity associated with utilisation, enabling greater sustainability of outcomes.

Capital Management Update

R&D loan

The Company is currently finalising conditions precedent for the first drawdown under its new R&D loan facility, aiming for January 2021 (see announcement 21 October 2020).

To date, the Company has accrued a future cash refund of ~$800,000 under the AusIndustry R&D Tax Incentive. This refund will act as the primary security for the R&D loan.

Insurance proceeds

On Wednesday 9 December 2020, ECT submitted the necessary documentation for its insurance company to assess the final payment of $593,000, with payment expected in January 2021.

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 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

Coldry is the gateway enabler of higher-value applications for low-rank coals.

Low-rank coals are a rich source of valuable hydrocarbons. Still, they suffer from high moisture content that must be reduced to enable higher-value upgrading and conversion to solid fuels, liquid or gaseous hydrocarbons.

Drying is easy. However, drying efficiently and cost-effectively has been the challenge. Coldry meets this challenge through a combination of 'brown coal densification' and waste heat utilisation, delivering the world's first low temperature, low pressure, low cost, zero CO_2 emissions drying process.

About HydroMOR

The HydroMOR process has the potential to revolutionise primary iron making.

HydroMOR is a simple, low cost, low emission, hydrogen-driven technology that enables 'low value' feedstocks to produce primary iron.

About COHgen

The COHgen process has the potential to deliver a lower cost, lower emission method for hydrogen production from brown coal.

COHgen is currently advancing through fundamental laboratory development intended to form the basis for a patent application ahead of scale-up and commercialisation.

About CDP-WTE

The catalytic depolymerisation-based waste-to-energy process converts 'low-value' resources into higher-value diesel and other valuable by-products.

CDP-WTE can be deployed as a standalone solution or integrated with the Coldry process to deliver higher-value, lower-emission energy solutions to lignite resource owners.

Areas covered in this announcement:

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