

## ASX Announcement

Tuesday 27<sup>th</sup> January 2015

### Second CETO 5 Unit Installed and Operating

- Two CETO 5 units now operating at Perth Project site
- First CETO 5 unit operating for over 1700 hours
- Power supply to Defence Department to commence shortly

Wave energy developer Carnegie Wave Energy Limited (ASX: CWE) is pleased to announce that the second of its new generation CETO 5 wave energy units has been successfully installed and is operating at its Perth Wave Energy Project site off Garden Island, Western Australia.

The second CETO 5 unit was successfully installed in one day and has now been operating for a little over a week. The sea state conditions experienced during this initial operational period have included waves up to 3.5m in height. The Unit is operating in line with expectations alongside the first CETO 5 unit, installed in November last year. The first CETO 5 unit has now been operating for over 1700 hours, and has experienced a range of sea states, including waves up to 3.8m in height.



CETO Unit 2 prepared for deployment quayside along CETO Unit 3 (L), Carnegie operations team member controlling position of Buoyant Actuator from deployment barge (R)



The second CETO 5 unit being installed off Garden Island, Western Australia



**CETO Units 1 and 2 [circled]**

Both units are generating electricity against a load bank onshore, with the Project awaiting final approval from Western Power to transfer power into the grid at HMAS Stirling.

Carnegie's Managing Director, Dr Michael Ottaviano, said:

"The successful installation of our second CETO 5 unit is an important event, as is achieving our stated aim of installation in a day. The integration of multiple wave energy convertors is critical to demonstrating the principles of future CETO wave farms. With the recent completion of onshore plant and grid connection works, we are eagerly anticipating the world-first milestone of feeding electricity into the grid at HMAS Stirling."

### **Next Steps**

The third and final CETO 5 unit has been moved to the Australian Maritime Complex (AMC) in Henderson for final fit out ahead of its installation. The AMC is a world class marine industrial facility and will also be the likely staging point for Carnegie's CETO 6 Project.

Current plans have Unit 3 deployment taking place after an initial Unit 2 run of some 30 days or so, subject to suitable weather conditions, and timed to coincide with the retrieval of the first CETO 5 Unit for onshore inspection. Amongst other objectives, the 3rd CETO 5 Unit will be used to demonstrate operation and maintenance methodologies and, as such, may be held onshore for longer than 30 days to minimise installation and retrieval costs should Unit 1 continue to operate without needing to be retrieved onshore.

### **Background**

The Perth Wave Energy Project has been under construction for approximately 12 months beginning with the installation of the CETO 5 unit offshore foundations last summer. The construction was preceded by some 2 years of design, approvals, offtake, financing and procurement activity. More than \$30m has been invested in the design, development and construction of the project. The CETO technology takes a unique approach to wave power by generating both power and water from the ocean swell while remaining fully submerged beneath the ocean surface, increasing its ability to survive large storms.

### **About Carnegie**

[Carnegie Wave Energy Limited](#) is an Australian, ASX-listed (ASX:CWE) wave energy technology developer. Carnegie is the 100% owner and developer of the CETO Wave Energy Technology intellectual property.

### **About the Australian Maritime Complex (AMC)**

The Australian Marine Complex is home to the largest marine industry in Australia and was developed to facilitate and enhance the opportunities created by the clustering of sectors servicing the marine, defence, oil and gas and resources industries.

The AMC is the southern hemisphere's premier integrated marine industrial facility that enables industry to deliver projects of an international scale.

Located at Henderson, 23 kilometres south of Perth and on the shores of Cockburn Sound, the AMC provides protected deep water harbours, world class multi-user load-out and fabrication facilities and is connected to industrial areas via high-wide load road access.

### **About CETO**

The CETO system is different from other wave energy devices as it operates under water where it is safer from large storms and invisible from the shore. The technology is capable of generating power onshore or offshore depending upon the specific characteristics of a project site.

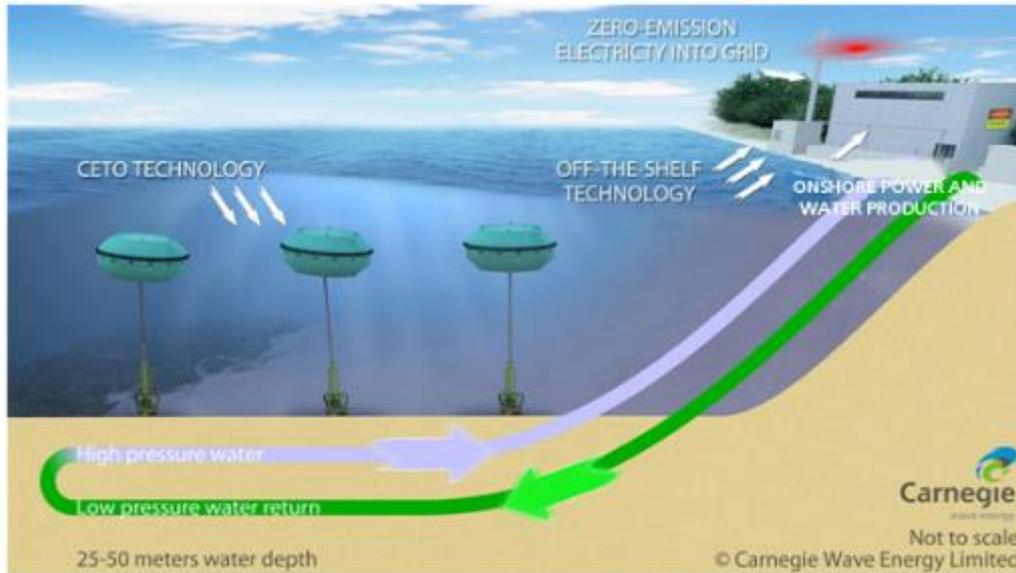
CETO technology characteristics include:

- Converts ocean wave energy into zero-emission electricity and desalinated water.
- Environmentally friendly, has minimal visual impact and attracts marine life.
- Fully-submerged in deep water, away from breaking waves and beachgoers, and unaffected by storms.

### **Perth Wave Energy Project ('PWEF') Fact File**

- Upon completion, PWEF will be the first commercial-scale CETO grid and desalinated water connected wave energy project.
- The Perth Wave Energy Project is supported by \$13.1m in Australian Government funding through the Australian Renewable Energy Agency's Emerging Renewables Program.
- PWEF is supported by \$7.3 million from the Government of Western Australia's Low Emissions Energy Development (LEED) Fund. This is part of a larger \$10 million LEED grant, awarded to Carnegie by the Western Australian Government, to support the development of the CETO technology from concept through to completion of PWEF.
- The Desalination Pilot is supported by a \$1.27m AusIndustry grant from the Clean Technology Innovation Program.
- Providing clean, renewable energy and potable desalinated water to Australia's largest naval base, HMAS Stirling, on Garden Island in Western Australia.

The CETO 5 technology being utilised in the Perth Wave Energy Project (PWEF) is configured to utilise the CETO pumps to pressurise water and deliver it onshore via an underwater pipe. Then, onshore, high-pressure water is used to drive hydroelectric turbines, generating zero-emission electricity. The high-pressure water can also be used to supply a reverse osmosis desalination plant, replacing or reducing reliance on greenhouse gas-emitting, electrically-driven pumps usually required for such plants.



**CETO 5 (Perth Wave Energy Project) Power & Water Schematic**

**For more information:**

Dr Michael Ottaviano

CEO & Managing Director

Carnegie Wave Energy Limited

+61 8 9486 4466

[enquiries@carnegiewave.com](mailto:enquiries@carnegiewave.com)

Website: [www.carnegiewave.com](http://www.carnegiewave.com)