



# European Union

European Regional  
Development Fund



## ASX Announcement

6<sup>th</sup> November, 2016

### **Carnegie Wave Energy receives £9.6m (AUD\$15.5m) European Regional Development Fund grant for first international export CETO project in the United Kingdom**

**Leading wave energy developer, Carnegie Wave Energy Limited (ASX: CWE) is pleased to announce it has been granted £9,551,962 (AUD\$15.5m) from the European Regional Development Fund to support the first phase of its planned 15MW commercial wave energy project at Wave Hub, Cornwall in the United Kingdom.**

Cornwall's Wave Hub is the world's largest and most technologically advanced site for the testing and development of offshore renewable energy technology. CWE is the only company in the world to have operated a grid-connected wave energy project over four seasons.

This project focuses on the implementation of the 1MW stage 1 of a planned phased scheme, for which stage 2 (planned for 2020/21) will deliver a subsequent 15MW commercial array at the same site, offering a commercial return on investment. The project will commence immediately, with commissioning set for 2018, followed by 12 months of operations.

The £9,551,962 grant from the European Regional Development Fund, is part of the European Structural and Investment Funds Growth Programme 2014-2020, and forms 65% of the funding for stage 1: a £14.7m project to design, construct, install and operate a single 1 megawatt (MW) grid-connected CETO 6 wave energy converter device, adapted to local conditions and industrialised for large scale commercial deployment at the purpose built, Wave Hub test site in the UK.



Hayle Marine Renewable Business Park and Wave Hub sub-station looking north-west over St Ives towards the Wave Hub offshore site (Source: Cornwall Council).



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

Suite 5, 4B Mews Road, Fremantle WA 6160

PO Box 1206, Fremantle WA 6959

t: +61 8 9335 3993 f: +61 8 9433 5600

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

A.B.N 69 009 237 736

George Eustice, Minister of State at the UK Department for Environment, Food and Rural Affairs (DEFRA) and MP for Camborne said:

*"I am delighted that Carnegie secured the £9.55m of ERDF funding and chosen to deliver its CETO wave energy project at Wave Hub. Cornwall offers a cluster of academic and industrial expertise, world class test facilities, infrastructure and resources which ensures it is well positioned to play a significant role in securing the UK's continued reputation as a market leader in offshore renewables."*



**Wave Hub unit being deployed 16km offshore from Hayle, Cornwall. The Wave Hub test facility is the world's largest and most technologically advanced site for the development of offshore renewable energy technology.**

Carnegie's Managing Director and Chief Executive Officer, Dr. Michael Ottaviano said:

*"The United Kingdom offers unique advantages for the commercialisation of CETO. This funding from the European Regional Development Fund is a prime example of the funding support available that is accompanied by marine energy revenue support, experienced supply chains, demonstration sites such as Wave Hub and deep investment knowledge in the renewable energy sector. We are delighted to have been selected through what is a highly competitive process consisting of a rigorous technical and commercial assessment process".*

*"Being able to deploy our commercial generation CETO units at the purpose built, grid connected Wave Hub test site, that also offers project expansion capability, significantly derisks and accelerates our path to commercialisation. We are pleased that stage 2 is set to offer a commercial return on investment with its 15MW array which will allow third party investment in this stage. It is a major endorsement of Carnegie and its CETO technology and representative of our ability to export this technology to the world."*

Cornwall Council's Cabinet Member for economy and culture, Mr. Julian German said:

*"Cornwall has made significant investments into marine renewables energy (MRE) with the goal of securing our low carbon future and to create a Cornwall and Isles of Scilly energy market. Attracting Carnegie, as a recognised world leading wave energy developer, to Cornwall reflects our long term and continued support to the sector and our world class testing facilities, wave energy resource, exceptional skills and internationally recognised offshore renewables supply chain."*



**Carnegie Wave Energy's Managing Director and CEO, Dr. Michael Ottaviano (left), Cornwall based Modelling and Analysis Engineer Jack Jorgenson (centre), and CWE UK CEO, Tim Sawyer (right) at Hayle Harbour, Cornwall.**

CWE UK's CEO, Tim Sawyer said:

*"Over the last 10 years, Carnegie has made tremendous strides in the development of its CETO wave energy technology. Securing ERDF funding, and bringing in additional private investment, means we can now deliver stage 1 of our planned 15MW commercial wave energy project at Wave Hub, leveraging the UK's world class marine science, engineering research and operational expertise."*

Carnegie has been developing its CETO wave energy technology for over 10 years, culminating in the deployment and operation of a grid connected array of three CETO 5 units in 2014/15, known as the Perth Wave Energy Project (PWEP), at Garden Island in Western Australia. The PWEP accumulated over 14,000 hours of operation and was the only known grid connected, wave energy array operating in the world in 2015. It utilised Carnegie's 5th generation CETO technology and has been supported by grant funding from the Australian Federal and Western Australian State Governments. Carnegie is currently developing a follow-on pre-commercial Project to design and demonstrate the next generation of CETO technology, the 1MW CETO 6 Unit.

CETO 6 offers higher rated capacity and increased efficiency which, when deployed in large commercial arrays, will ultimately deliver a levelised cost of energy competitive with offshore wind. Longer term development will continue to push costs lower below this benchmark. It is this technology that will be utilised, developed and adapted for deployment in Cornwall.

The project will be delivered locally by CWE's UK subsidiary, CWE UK, based at Hayle Marine Renewable Business Park, with commercial and technical support from its Australian parent company and developer of the CETO wave energy technology, Carnegie Wave Energy. Delivery of the project will leverage Cornwall's, and the UK's, exceptional wave energy resource, marine energy revenue support, maritime industrial heritage, the world class Wave Hub infrastructure, and active and innovative marine engineering and research sectors. Carnegie would also expect to utilise the marine energy feed in tariff available in the UK which equates to an estimated £305/MWh for the second stage of the Project.

Deployment and operation of the CETO device will be within a defined berth at the pre-consented Wave Hub facility in Cornwall. Wave Hub is a facility for pre-commercial testing of wave energy device arrays. It provides a fully grid-connected and consented wave energy site, located approximately 10 nautical miles (16km) off the north coast of Cornwall. The Wave Hub Offshore Deployment Area, which covers 8 km<sup>2</sup> of seabed, is divided into four separate berths available to lease to wave energy device developers, with a 30MVA grid connection agreement.

This project will be able to leverage the existing design work already completed by Carnegie for the CETO 6 technology; however, further development will be required to adapt the technology for local site conditions. The project will also include engagement with and coordination of a suitable supply chain for the construction and operational phase. The successful demonstration of this project will therefore present a real opportunity to commercialise wave energy in the UK through bridging the gap between technology readiness and commercialisation.

## **FACT FILE**

### **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. Carnegie is focussed on commercial opportunities in key target markets including UK, Europe, Australia and remote islands. Subject to the approval of its shareholders on 2<sup>nd</sup> December 2016, Carnegie will also become the 100% owner of leading Australian battery/solar microgrid Engineering Procurement and Construction (EPC) company Energy Made Clean, which specialises in the delivery of mixed renewable energy microgrid projects to islands and remote and fringe of grid communities. Through this acquisition, Carnegie will be the world's first company to deliver a combination of wave, solar, wind, storage and desalination into microgrids.

### **CWE UK**

Carnegie established CETO Wave Energy UK (CWE UK) as a wholly owned subsidiary in 2013. CWE UK has its offices at the Hayle Marine Renewable Business Park in Cornwall, UK.

### **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.



CETO technology characteristics include:

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

### **European Regional Development Fund**

The CETO Wave Hub Project is receiving £9,551,962 of funding from the England European Regional Development Fund as part of the European Structural and Investment Funds Growth Programme 2014-2020. The Department for Communities and Local Government (and in London the intermediate body Greater London Authority) is the Managing Authority for European Regional Development Fund. Established by the European Union, the European Regional Development Fund helps local areas stimulate their economic development by investing in projects which will support innovation, businesses, create jobs and local community regenerations. For more information, visit <https://www.gov.uk/european-growth-funding>.



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### **Wave Hub**

Wave Hub is a grid connected wave energy test site in Cornwall, UK, developed to accelerate and support pre-commercial testing of wave energy device arrays. It provides a fully grid-connected and consented wave energy site, split into 4 berths, located approximately 10 nautical miles (16km) off the north coast of Cornwall. In 2014, Carnegie was awarded a wave energy berth at the purpose built Wave Hub facility in Hayle, Cornwall. The berth allows Carnegie to construct a 10-15MW CETO array, connected to the subsea electrical cables already installed and the existing grid connection.

### **For more information:**

Dr Michael Ottaviano  
CEO & Managing Director  
Carnegie Wave Energy Limited  
+61 8 9335 3993  
[enquiries@carnegiwave.com](mailto:enquiries@carnegiwave.com)  
Website: [www.carnegiwave.com](http://www.carnegiwave.com)

