

September 2011

Wave Energy Centre Annual  
Conference, Madeira Island



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# Carnegie Wave Energy (CWE) – snapshot

## Australian Stock Exchange (ASX) - CWE

Shares on issue	900m
Share price	9c
12-month share price range	8c – 15c
Average daily volume	\$55,000
Market capitalization	\$80m
Debt	Nil
Net Cash	\$4m



- Australian inventor, owner and developer of **proprietary wave energy technology** ("CETO")
  - Capable of producing **zero-emission renewable power** and **desalinated freshwater directly** from the ocean's waves
  - 67 patents or patent applications
- 25 engineering, commercial, and administration staff
- International Board of Directors
- Australian owned, headquarters in Western Australia (WA)
- Dedicated private **wave energy research facility** in Fremantle, WA

# International Board of Directors

## Australia-based



### **Dr. Michael Ottaviano, MD & CEO**

- Technology and R&D background
- Clean Energy Council board member
- Member of Australian Government's Energy White Paper committee
- CEO since 2006, oversaw increase in market capitalisation from \$5M



### **Grant Mooney, Chairman**

- Extensive experience in capital raisings, M&A and corporate governance
- Director and company secretary to several ASX-listed companies across a variety of industries including technology and resources
- Principal of corporate advisory firm Mooney & Partners



### **Greg Bourne, Non-Exec Director**

- Former CEO of WWF Australia
- Former Special Adviser to the Prime Minister on Energy and Transport in the UK
- Held numerous high-level roles with BP including Drilling Engineer, Director of BP Scotland, Regional Director - Latin America, and Regional President - BP Australasia



## Europe-based

### **Kieran O'Brien, Executive Director**

- 15 years as Executive of Ireland's Electricity Supply Board
- Fmr Chairman of the Board of ESBI, Alberta
- 6 years as a member of the Officer's Council of the World Energy Council (WEC)
- Formerly Acting Secretary General of the World Energy Council
- Chairman of the Energy Standing committee of the Irish Academy of Engineering



### **Jeff Harding, Non-Exec Director**

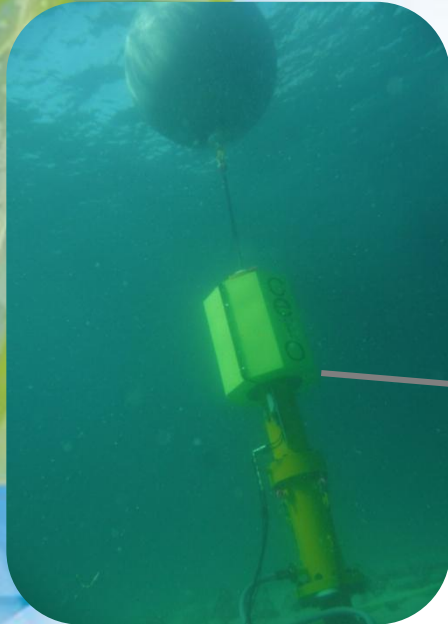
- Previously CEO of Pacific Hydro, Australia's largest renewable energy developer
- Oversaw the international expansion of Pacific Hydro with growth in market cap from A\$5M to over A\$750M
- Chairman of AIM-listed Ceramic Fuel Cells



### **John Leggate, Non-Exec Director**

- Former Chief of Information of BP
- Serves as Senior Advisor to CleanTech Advisory Council at Vantage Point Capital Partners
- Honoured as Commander, The Most Excellent Order of the British Empire by the Queen in 2004.

# CETO Wave Energy – renewable water & power



**CETO aims to be the cheapest, most robust and widely adapted wave technology due to:**

- **Engineered simplicity** – pumps offshore, power and water production onshore
- **Scalable** – modular array design, global resource & market
- **Flexible** - variety of water depths, swell directions, seafloor conditions, offshore power platform option
- **Minimal impact** - no visual impact, co-exists with marine life, small footprint
- **Desalination** - hydraulic power allows efficient “direct desalination“ independent of power production

# Recent Activities

- Completed CETO 3 design, manufacture, deployment and testing
- Conceptual design for the Perth Wave Energy Project nearing completion
- Delivered an Irish site assessment and conceptual design studies
- Frazer-Nash independently verified CETO 3 results



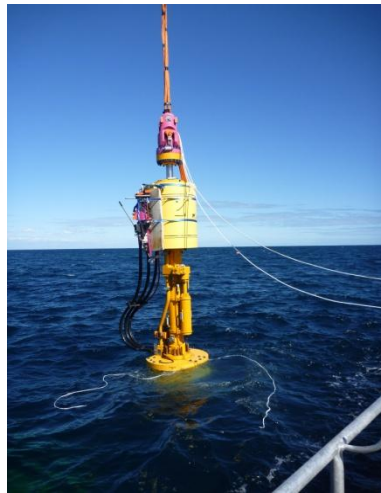
# CETO3 Commercial Scale Unit



# CETO3 Commercial Scale Unit



CETO3 pump, attachment & connector installation



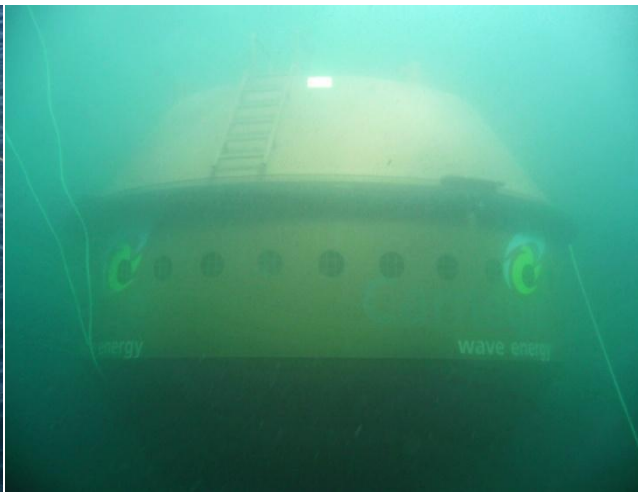
CETO3 pump, attachment & connector installation



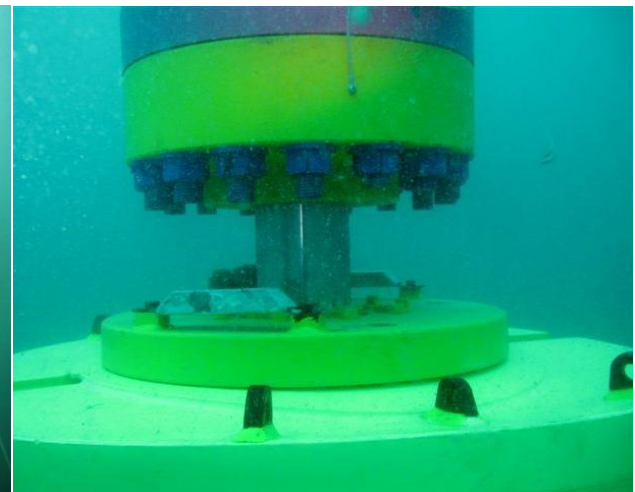
Buoyant Actuator installation



Fully submerged Commercial Scale CETO3 unit in operation next to deployment barge

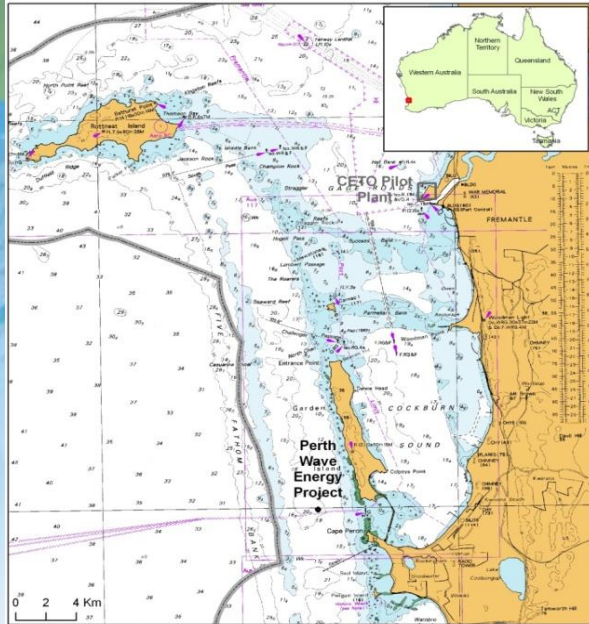


Commercial Scale Buoyant Actuator operational



Commercial Scale CETO3 pump operational

# Perth Demonstration Project – Garden Island, Western Australia



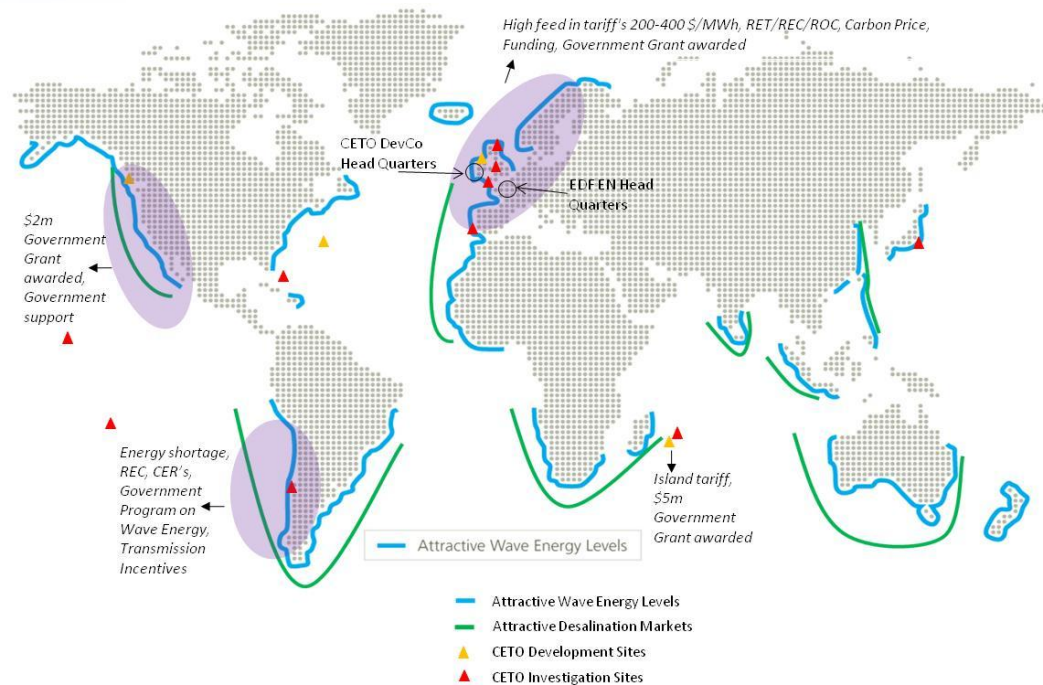
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- Project installed capacity of 1-2 MW (5-10 x CETO5 units)
- Onshore site is Australia's largest naval base (HMAS Stirling)
- MoU with Department of Defence for onshore site & offtake
- Offshore licence and grant funding from WA Government
- Sub-sea pipelines to and from shore including shoreline crossing and approach
- Onshore hydro-electric power generation facility
- Total capital cost \$20m - \$25m with 25% WA Govt (confirmed), 25% Federal Govt (tbc) and balance Carnegie equity

# Market opportunities

- Carnegie is focused on two major market opportunities:
  1. Government supported markets
    - tariffs, grants, site legislation etc
    - e.g. Ireland, Scotland, UK, Australia
  2. Island nations
    - ability to displace expensive liquid fuels
    - Reunion Is, Bermuda, French Polynesia, Canaries, for example



# Government supported market- Ireland



- Carnegie is one of the most advanced wave companies operating in Ireland
- Collaboration agreement with SEAI at AWETS
- SEAI grant funding
- Detailed site assessment completed along west coast
- conceptual design for 5MW project completed
- tenure now being sought for preferred site for 5MW project

# Remote islands



Fully submerged Commercial Scale CETO unit in operation next to deployment barge

The CETO wave Technology is ideally suited to the remote island market due to:

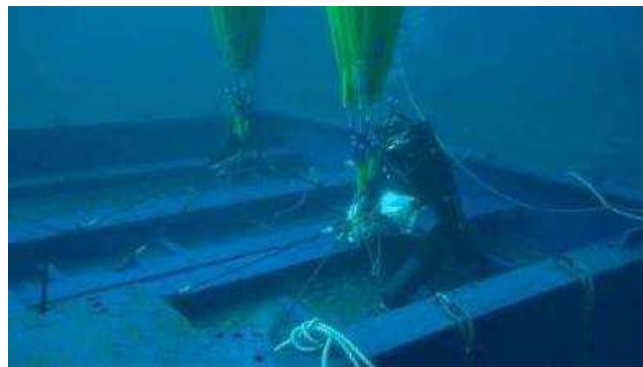
- ✓ no visual impact
- ✓ simplicity (installation and O&M)
- ✓ familiarity with hydro power generation
- ✓ direct desalination capability



*Reunion Island*

# Reunion Island

- High power price
- Government support
- Well understood wave climate
- JV with EDF EN
- DCNS providing EPC
- French government funding awarded
- Foundation complete
- Unit components at site
- Onshore systems testing complete and waiting weather window for deployment



# Bermuda

## Background

- High power price (\$420/MWh)
- Water stressed region – currently using desalination
- All new power generation mandated to be renewable
- Established relationship with regulators and grid operators
- Well understood approvals process

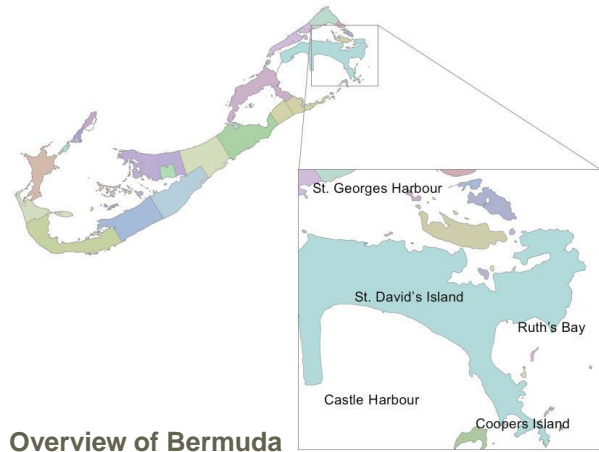
## CWE Activities

- CETO selected by local utility Belco in competitive process
- MOU with local development company Triton Renewable Energy
- Pre-feasibility report and environmental scoping report
- Onshore & offshore sites identified
- Wave buoy deployed at the site

## 3 Stage Project Proposal

- 1) Project feasibility, including wave buoy deployment (underway)
- 2) Financing, design, and construction of 15MW plant
- 3) Managing and O&M

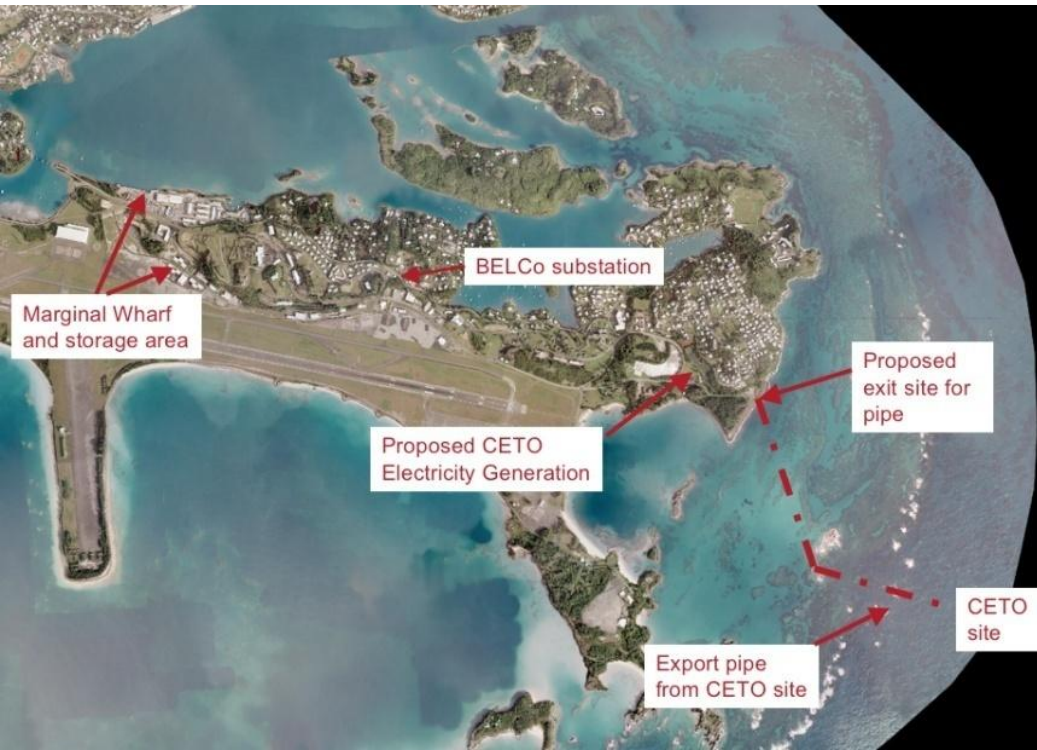
# Bermuda



Overview of Bermuda



Ruth's Bay, Bermuda



# Current focus

- finalise CETO 5 concept design
- Perth demonstration project detailed design (including: pipeline, foundations, power take off)
- progress Irish project
- progress Scottish site tenure
- progress remote island and global site pipeline

