

ASX Announcement

2 May 2018

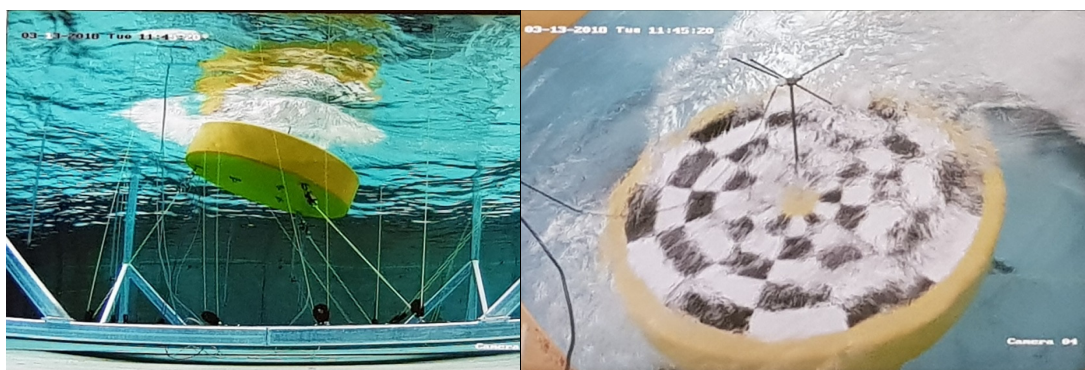
CETO Wave Energy Update

- CETO 6 wave tank testing completed at University of Plymouth
- Albany Wave Energy Project site specific design and development advances
- CETO 6 Wave Hub update
- Re-election of Carnegie's Kieran O'Brien to the Ocean Energy Europe's Board of Directors

Carnegie Clean Energy Limited (ASX:CCE) is pleased to provide an update on the latest developments on its Albany Wave Energy Project, Wave Hub Project, recent wave tank testing as well as new and ongoing collaboration relationships with several key partners and suppliers.

Carnegie and the University of Western Australia (UWA) have continued to build on their ongoing collaborative relationship, working together on existing and new funded R&D projects including activities undertaken through the new Wave Energy Research Centre (WERC). Carnegie and UWA were successful in applying for funding under the European MARINET program, being awarded funding for 15 days of tank testing at the COAST facility at Plymouth University in March 2018. Design and scaled tank testing of the CETO buoy and power take off system in a controlled environment prior to full scale manufacture and ocean deployment is a critical component of the de-risking and development and testing of the CETO 6 unit.

Carnegie and UWA have now completed the tank testing program which investigated the response of wave energy converters in extreme conditions as well as methods for determining the design wave of the CETO device. The testing was successfully completed and data analysis is ongoing to produce the final load and motion cases for Albany ocean deployment.



CETO 6 Wave Tank Testing at University of Plymouth in March 2018

Over recent months, Carnegie and its partners and contractors have been progressing a number of key site development activities at Albany including:

- completion of a connection feasibility study with Western Power indicating no barriers to grid connection of the project anticipated;
- completion of a site LIDAR survey by Australian Hydrographic Office that gathered detailed bathymetry data to support the site characterisation and metocean modelling;

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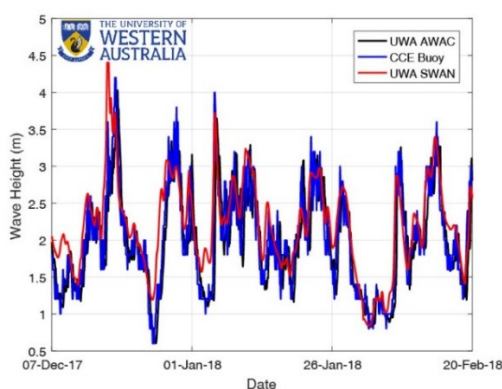
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- award of geophysical survey contract to inform the site characterisation and design of the foundations and shore crossing;
- local supplier briefing and engagement and ongoing stakeholder engagement;
- completion of a metocean modelling study;
- deployment of an acoustic wave and current meter and ongoing monitoring of the previously deployed wave buoy; and
- local site investigations, studies and surveys.

Carnegie and UWA continue working together to build a Metocean model which supports the development of the Project as well as provide useful data to future wave energy developers deploying at the Albany site as well as other local industries. Analysis of Carnegie's wave buoy, UWA's acoustic wave and current profiler and UWA's SWAN numerical model shows a good correlation. Through WERC, UWA will also soon deploy two additional wave buoys at strategic locations which will further help calibration of this Metocean modelling work.



Metocean Model Calibration with recent data from the wave buoy and AWAC (left) and Carnegie visiting the Australian Hydrographic Office aircraft following local Laser Airborne Depth Sounder (LADS) survey (right)

Carnegie and UWA are also now analysing a useful set of bathymetry data captured by the Australian Hydrographic Office who performed an airborne LIDAR survey of the site while working in the region. This data will be used in the metocean modelling and upcoming offshore geophysical survey.

In March, Carnegie exhibited at the Great Southern Sustainable Living Fair & Expo in Albany, presented at an Engineers Australia event with University of Western Australia and worked with the Great Southern Development Commission to host a local supplier briefing to ensure that local suppliers have full, fair and reasonable opportunities to participate in the Project.



Engineers Australia Presentation (left) and Carnegie and UWA exhibits at Great Southern Sustainable Fair & Expo in Albany



European Union
European Regional
Development Fund



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Upcoming activities include the award of a number of site development contracts including those in relation to the completion of an updated Environmental Impact Assessment and a site-specific foundation study. Consultation with specific project stakeholders and engagement with the local supply chain will be also continue.

On the back of Albany Wave Energy Project being the first CETO 6 deployment, Carnegie and the UK Ministry of Housing, Communities & Local Government have signed a Variation Agreement modifying the European ERDF funded CETO 6 Wave Hub Project. The revised Project will still deliver value to Cornwall and will continue to support the development of a future commercial CETO array at Wave Hub through a series of local collaborations with strategic partners such as Wave Hub Limited, University of Plymouth and James Fisher Marine Services in place of building and operating the initial single CETO 6 unit at Wave Hub. Under the revised Project agreement, Carnegie will receive a £312,934 (approximately \$500k) grant payment for the development undertaken to date and the ongoing collaborative activities being undertaken with local partners.

Carnegie also continues to play a leading role in guiding international marine renewable industry development with the re-election of Carnegie's Director Kieran O'Brien to the Ocean Energy Europe's Board of Directors. Laurent Schneider-Maunoury (Naval Energies, France) and Simon De Pietro (DP Energy, Ireland) were elected co-presidents.

Carnegie also continues to be actively engaged in a diverse portfolio of collaborative research and development projects both within Australian and in the UK and Europe. Wave Hub specifically, and the UK and Europe more generally, remain important markets and locations for future CETO deployments and projects. The European Commission has invested over €300 million (\$480m) in ocean energy research and development over the past 10 years with significant additional investment in research, development and testing infrastructure from the UK Government. In the UK alone, there has been more than £500 million (\$916m) of government and private investment in the UK wave and tidal sector. This level of strategic industry funding support alongside with the local marine renewable resource and supply chain expertise means that Europe and UK will remain important factors in the commercialisation of CETO.

About CETO 6 and the Albany Wave Energy Project

The first deployment of the CETO 6 unit will be at Albany in Western Australia. The Albany Wave Energy Project (AWEP) is a technology development project that involves the design, manufacture and installation of a CETO 6 unit in Carnegie's existing licence area offshore from Torbay and Sandpatch in Albany during the 2019/2020 summer weather window. The unit will be operated for 12 months during which Carnegie will be testing the system to maximise learnings include optimising system performance, validating computational modelling results, refining installation and removal methodologies, and validating the reliability of the system.

The Project will also deliver common user infrastructure at the Albany site which Carnegie will make available for other wave energy industry developers once AWEP is complete. AWEP is supported by \$15.75m from the Western Australian Government's Department of Primary Industries and Regional Development and \$11.7m of undrawn funding from Carnegie's \$13m CETO 6 grant from the Australian Renewable Energy Agency (ARENA).

About Carnegie Clean Energy Limited

Carnegie Clean Energy Limited is an Australian, ASX-listed (ASX: CCE) wave energy technology developer and solar/battery microgrid project developer. Carnegie is the 100% owner and developer of the CETO Wave Energy Technology intellectual property and is also 100% owner of leading Australian battery/solar microgrid

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Engineering Procurement and Construction (EPC) company Energy Made Clean (EMC). EMC specialises in the delivery of mixed renewable energy microgrid projects to islands and remote and fringe of grid communities. Carnegie is the only company in the world to offer a combination of wave, solar, wind, storage and desalination via microgrids which are ideally suited to islands, off grid communities and fringe of grid locations.

About Department of Primary Industries and Regional Development

The Department of Primary Industries and Regional Development (DPIRD) is committed to building vibrant regions with strong economies through jobs growth, economic growth and capable people. The Department is responsible for the effective planning, coordination and delivery of the State Government's regional development agenda. This includes the management of the Royalties for Regions investment program and maintaining effective relationships with key partners across government, industry and the community. The Western Australian State Government, via DPIRD, is investing \$15.75 million in grant funding into the Albany Wave Energy Project and a further \$3.75m into the Wave Energy Research Centre via the University of Western Australia.

About ARENA

ARENA was established by the Australian Government to make renewable energy technologies more affordable and increase the supply of renewable energy in Australia. Through the provision of funding coupled with deep commercial and technical expertise, ARENA provides the support needed to accelerate the development of promising new solutions towards commercialisation. ARENA invests in renewable energy projects across the innovation chain and is committed to sharing knowledge and lessons learned from its portfolio of projects and information about renewable energy. ARENA always looks for at least matched funding from the projects it supports and to date has committed \$1.1 billion in funding to more than 270 projects. For more information, visit www.arena.gov.au. ARENA has approved the transfer of \$11.7m of undrawn grant funds from Carnegie's \$13m CETO 6 Project funding from Garden Island to Albany.

European Regional Development Fund

The CETO Wave Hub Project is receiving £312,934 funding from the England European Regional Development Fund as part of the European Structural and Investment Funds Growth Programme 2014-2020. The Ministry of Housing, 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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