

#### BOARD OF DIRECTORS & CEO

Non-Exec Chairman - Terry Stinson

Non-Exec Director - Grant Mooney

Non-Exec Director - Michael Fitzpatrick

Non-Exec Director - Anthony Shields

Chief Exec Officer - Jonathan Fievez

### CONTACT DETAILS

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#### QUARTER HIGHLIGHTS

- \$1.6m Mooring Tensioner project led by Carnegie awarded funding by Blue Economy Cooperative Research Centre
- Advancements in development of Carnegie's Intelligent Control products, power take off (PTO) system and CETO architecture
- Selected for a Microsoft AI for Earth grant providing computing power and support for a project to enhance Carnegie's Wave Predictor

During this quarter, the Carnegie team expanded with the addition of new recruits supporting the ongoing work on the CETO system hydrodynamics and PTO. The team has also been making great strides in the development of the Intelligent Control products, particularly with regards to the Wave Predictor and controller.

Carnegie has also recently received additional support for the work being undertaken to improve the performance and reduce the cost of CETO. Carnegie was awarded funding to support the development of the Mooring Tensioner (a part of the PTO) through the Blue Economy CRC. Carnegie was also selected to receive a Microsoft AI for Earth grant that provides computational resources to support enhancements to the Wave Predictor.



# CETO DEVELOPMENT

During the quarter, the Carnegie team has grown with new specialist recruits who are now supporting the hydrodynamic and PTO development activities within the Digital Development Pathway.

Key CETO development activities completed and underway were recently detailed in the Corporate Update Announcement released on 7 October 2020. Some of the recent highlights this quarter include:

- Awarded Blue Economy CRC funding for Carnegie led \$1.6m Mooring Tensioner project
- Advanced Carnegie's Intelligent Control products including the Wave Predictor, Wave Solver and Wave Controller
- Selected to receive a Microsoft AI for Earth grant to support work to enhance Carnegie's Wave Predictor
- Progressed development of the power take off system via engagement with generator suppliers, local engineering firms and collaboration with other international wave energy developers
- Refined Carnegie's techno-economic modelling tool to support definition of the CETO architecture
- Updated Digital Development Pathway to reflect impact of COVID on the schedule



Updated Digital Development Pathway



## **CETO Collaborations**

The team has continued its close collaborations with industry and research partners such as local engineering firms, specialised international suppliers and engineering groups, other wave energy developers, University research groups, the Australian Ocean Energy Group and collaborative groups such as the Blue Economy Cooperative Research Centre.

Together with academic partners, Carnegie continues accessing the Pawsey Supercomputing Centre, using Magnus to run hydrodynamic simulations and Topaz to support the Wave Predictor development. Carnegie was excited about the recent selection of Hewlett Packard Enterprise (HPE) to deliver a new Pawsey supercomputer that has an impressive 30-fold increase in computing power compared to Pawsey's existing supercomputers (which are already significantly more powerful than standard computers), whilst also being 10 times more energy efficient. Access to the compute power at supercomputers such as at Pawsey are key enablers of the type of digital development work being undertaken by Carnegie.



Carnegie engineer presenting the Wave Predictor Animation to over 100 participants as part of a Blue Economy Webinar

#### **Mooring Tensioner Project**

The Blue Economy Cooperative Research Centre (BE CRC) has awarded \$850,000 of grant funding to support the Mooring Tensioner for Wave Energy Converters (MoTWEC) Project, a \$1.6 million project led by Carnegie with partners Advanced Composite Structures Australia (ACS-A), University of Queensland (UQ) and ClimateKIC representing the Australian Ocean Energy Group (AOEG). This Project will develop the novel Mooring Tensioner, a key



component that will support the use of rotary power take-off systems and associated cost reductions for wave energy converters. Work on this project is now underway.

#### Carnegie Wave Predictor Project Selected for Microsoft's AI for Earth Program

In late October, Carnegie was selected to receive a Microsoft AI for Earth grant to support a project that uses artificial intelligence (AI) to enhance the capabilities of Carnegie's Wave Predictor and broadens its potential applications. Carnegie's project was chosen through a competitive global selection process. Carnegie's AI for Earth grant provides Carnegie with a sponsored Microsoft Azure account and credits for Azure compute consumption up to \$15,000 USD to be used within one year. Over the next year, the team will access Microsoft Azure's Tesla V100 GPU data science virtual machines, high performance storage, as well as higher-level services, such as Azure Machine Learning, which includes powerful AI software tools such as AutoML. The hardware does the work to crunch the numbers and the software tools help to tune the neural networks, models and features making them run much more efficiently.

# GARDEN ISLAND MICROGRID

Throughout the quarter, the Garden Island Microgrid has been disconnected due to Department of Defence's base-wide electrical system upgrade on HMAS Stirling. The electrical upgrade is part of the larger 3A base redevelopment, with more than \$350m being spent on the island by the Department of Defence.

Carnegie's contractors are currently onsite finalising the reconnection works to the upgraded Defence electrical system and Carnegie is working towards securing Defence consent to recommence electricity generation from the Garden Island Microgrid in the near future.



Garden Island Microgrid

# CORPORATE ACTIVITIES

Carnegie has advised Shareholders that its Annual General Meeting (Meeting) will be held in person at Swan Yacht Club, Riverside Road, East Fremantle WA 6158 on Wednesday, 25 November 2020 at 9.00am (AWST). Carnegie's 2020 Annual Report was also recently released and can be found on the ASX and the Company's website.

With regards to the COVID-19 pandemic, the Company will adhere to all social distancing measures prescribed by government authorities at the Meeting, and Shareholders attending the Meeting will need to ensure they comply with the protocols. We are concerned for the safety and health of Shareholders, staff and advisers, so we will put in place certain measures including social distancing requirements.

As a precaution in relation to COVID-19, each Resolution will be decided by poll, based on proxy votes and by votes from Shareholders in attendance at the Meeting. Shareholders are strongly encouraged to vote by lodging their proxy form, in accordance with the instructions set out in the proxy form, by no later than 9.00am (AWST) on 23 November 2020.



Thanks for your support from your Carnegie team

We also remind Shareholders of the option to receive emails instead of printed copies of formal ASX documents. This includes Notice of Meetings and other documents that are usually printed. Email communication is better for the environment, gets to you faster and ensures more funds can be spent on developing our technology.

If you would like to receive electronic communication, please visit Carnegie's Share Registry Automic Group's website where

you can record your email address online and update your reporting options. More details on how to update your details can be found on Carnegie's website in the Investor Centre.

## **Financial Notes**

At the end of the Quarter, the Company had approximately \$3 million in cash reserves.

### Note 6 to Appendix 4C:

Payments to related parties of the entity and their associates were made during the quarter. In total, approximately \$57,500 was paid to Directors and associates for salaries, superannuation and contracted services.