

ASX Announcement



Wednesday, 22nd October 2014

Report to Shareholders for the Quarter Ended 30th September 2014

ACTIVITIES SUMMARY

During the quarter Carnegie Wave Energy Limited (ASX: CWE) focused primarily on its Perth Wave Energy Project (the Perth Project) with significant progress on the CETO unit assembly and test phase and the commencement of the offshore deployment phase. Carnegie also progressed its CETO 6 Project with the continuation of the design phase and the start of a number of research projects which will influence the design of the CETO 6 system.

Highlights from the quarter include:

- Commencement of the offshore deployment phase for the Perth Project
- ARENA funded CSIRO Project to study Perth Project
- Commenced Control Systems Project with University of Adelaide.
- Joined WavePod Project with Bosch Rexroth, Aquamarine and ESB
- Former Japanese Prime Minister visit to Carnegie's Wave Research Facility
- Received first ARENA grant funding payment for the CETO 6 Project
- Received \$670,000 in two quarterly Higginsville royalty payments
- Selected as a finalist in the Australian Technologies Competition

1. Perth Wave Energy Project

Deployment Phase Commenced

During the quarter Carnegie has made significant progress on the assembly and testing stage of the Perth Wave Energy Project and has now commenced the offshore deployment phase.



Complete CETO Unit #1 fully assembled in preparation for deployment

Carnegie has completed offshore preparations in advance of offshore deployment of the first CETO Pod and Unit, completed the construction of the onshore plant including the installation of the power generation and conditioning equipment on Garden Island and the assembly of the first CETO Unit ready for deployment.

The two elements to install for Project commissioning to occur are the CETO unit #1 (above) and CETO Pod #1 (below). Installation of both final elements require specific weather conditions (swell, seas and winds). The Pod is installed first, utilising a large crane barge, onto the previously installed mudmats. Pod installation is followed by its connection to the existing subsea pipework and pressure and communications testing.



Onshore testing of subsea Pod #1 ahead of deployment

Following the successful installation of Pod #1, the CETO unit #1 is towed to site and installed. The CETO unit itself is designed to be installed in a single day. For the first CETO 5 unit to be installed, Carnegie will allow several buffer days of calm weather to maximise the chance of any infant issues being identified and rectified safely in situ.

Ahead of the deployment phase, Carnegie has been working through a rigorous program of integration testing of the CETO units. This has allowed Carnegie the opportunity to identify and remedy problems before deploying the CETO units offshore. The testing program has included testing of the buoyant actuators, pumps, connectors, onshore and offshore pods, hoses, instrumentation and control system.



Carnegie employee (left) controlling in-ocean testing of the Buoyant Actuator (centre), onshore pump integration testing (right)

At the same time, Carnegie has also completed the final construction of the onshore plant, located on Garden Island, Western Australia, with the site and building works complete and the onshore hydraulic pod, motors, generators, process control system and grid connection installed.



Onshore Plant exterior (left) and interior (right)

A number of final offshore preparations have also been completed ahead of the deployment of the first CETO Unit. This included the installation of the lower foundation connector, the offshore mudmat and unit interconnection pipes.



Installation of Interconnection pipes (left) and installation of pod mudmat (right)

The continuation of onshore testing through the winter months has allowed the deployment phase to occur in October and November which are generally the best months off the west coast for such activities being after the winter swells and prior to the regular daily onshore seabreeze. As announced during the quarter, Carnegie will implement a conservative staged deployment strategy that brings on capacity of the plant in a controlled and gradual manner aimed at minimising installation and operational risk. Project commissioning involves the installation of CETO Unit 1 and an initial fault finding and operational optimisation period to identify, improve and/or correct any infant operating issues. Once CETO Unit 1 is operational, CETO Unit 2 will be installed and a new fault finding and optimisation period undergone, and importantly the interaction of multiple wave units analysed. This will then be followed by the installation and optimisation of the final CETO Unit 3.

Perth Project plays key part in new ARENA funded CSIRO Project

In July, Carnegie announced that it will be part of a \$1.3m national study undertaken by Australia's premier science agency, the CSIRO, to develop a wave energy atlas and improve the assessment of wave energy extraction on the marine environment.

The Australian Government's independent funding agency for emerging renewable technologies, the Australian Renewable Energy Agency (ARENA) awarded \$1.3 million of funding support for the Commonwealth Scientific and Industrial Research Organisation (CSIRO) to undertake the innovative wave resource mapping and modelling project.

Carnegie's Perth Project will be monitored using in-water oceanographic sensors, and the impacts of energy extraction assessed using computation modelling, allowing CSIRO to establish best practice guidelines for assessing the potential impact of wave energy plants.

2. CETO 6 Development

During this quarter, Carnegie has also progressed the CETO 6 technology design and development including commencing a \$1.8m project with University of Adelaide to research and develop control systems for the CETO technology and signing a memorandum of understanding for a collaborative project with Bosch Rexroth and other wave energy industry partners such as Aquamarine Power.

Control Systems Project with University of Adelaide

In July, Carnegie announced that it will partner with the University of Adelaide on a \$1.8m project part funded by an Australian Research Council (ARC) Linkage Grant to research and develop control strategies for wave energy converters.

The three year project will specifically focus on understanding and developing novel control strategies tailored for submerged point absorber wave technologies, such as Carnegie's CETO. Control strategies for wave energy generators focus on maximising power output by matching the wave energy converter characteristics to the oscillating forces of the waves. It represents a significant opportunity to considerably reduce the cost of energy by increasing power output with minimal additional capital expense. Carnegie engineers will work with University of Adelaide to develop control systems to improve the performance of the CETO technology, which could then be demonstrated as part of Carnegie's CETO 6 Project.

WavePod Collaborative Project with Bosch Rexroth and Aquamarine

During the quarter Carnegie signed a Collaboration MOU with leading European power industry firms and a number of UK based wave energy developers for an offshore electricity generator project aimed at reducing costs and increasing reliability. The collaboration brings together Carnegie's UK subsidiary, CWE UK, with Bosch Rexroth, Irish utility ESB, Aquamarine Power, Albatern and Manchester University spin-off M4M.

The WavePOD (Wave Power Offtake Device) aims to provide a commercial solution for the common need to create a standardised, self-contained offshore electricity generator for the wave industry to transform linear motion into electrical energy. It comprises a hydraulically driven generator system housed in a watertight enclosure which generates electrical power which is then cabled back to shore.

In September, the WavePOD prototype was delivered to the Institute for Fluid Power Drives and Controls at Aachen University, Germany for laboratory testing. The testing is designed to provide performance data on the WavePOD unit that will allow Bosch Rexroth to develop and refine the prototype prior to in-ocean testing with Aquamarine and Carnegie.

3. Corporate Activities

Former Japanese Prime Minister Visits Carnegie

In August, Carnegie hosted the former Japanese Prime Minister Mr. Naoto Kan at its Fremantle Wave Energy Research Facility. Since the Fukushima disaster, Japan has installed nearly 9GW of solar photovoltaic power and is investigating a mix of renewable energy options. Japan has the potential for a significant capacity of wave power projects with approximately 34,000km of coastline and a wave energy resource capable of generating up to 40GW of clean, renewable energy. During the visit, Carnegie and Mr. Kan discussed the potential for CETO wave technology in Japan.



Carnegie CEO Dr Michael Ottaviano with former Japanese Prime Minister Mr Naoto Kan and US Consul General Cynthia Griffin at Carnegie's Fremantle facility

Carnegie selected as finalist in the Australian Technologies Competition

Carnegie was recently selected as a finalist in the Australian Technologies Competition. Carnegie was one of 3 finalists in the Energy Technologies Award division as a result of its proprietary CETO technology being identified as an industry leader with innovative characteristics and with the capability to become a game-changer in the energy sector.

Government Grant Payments

During this quarter, Carnegie received grant payments totalling \$50,000 from the Australian Federal Government for the completion of the first milestone of the CETO 6 Project, the completion of a Knowledge Sharing Plan and detailed Project Plan. This is Carnegie's first payment from its new \$11m ARENA grant for the CETO 6 Project which will be located off Garden Island in Western Australia.

Royalty Payment

In August Carnegie announced the receipt of \$671,462 in two quarterly gold royalty payments related to Carnegie's mining royalty held in the Higginsville Gold Operations. The royalty is held by Carnegie at no cost as a result of Carnegie's previous activities as a minerals exploration company in the 1990s prior to the development of the CETO technology.

Joint Company Secretary Appointed

Carnegie's Chief Financial Officer, Mr Aidan Flynn was appointed as Joint Company Secretary. Mr Flynn will share the role with Mr Grant Mooney, Carnegie's current Company Secretary and non-executive Chairman.

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 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. Fully submerged buoys are tethered to seabed pump units. These buoys move with the motion of the passing waves and drive the pumps. The pumps pressurise fluid which is then used to drive hydro turbines and generators to produce electricity.

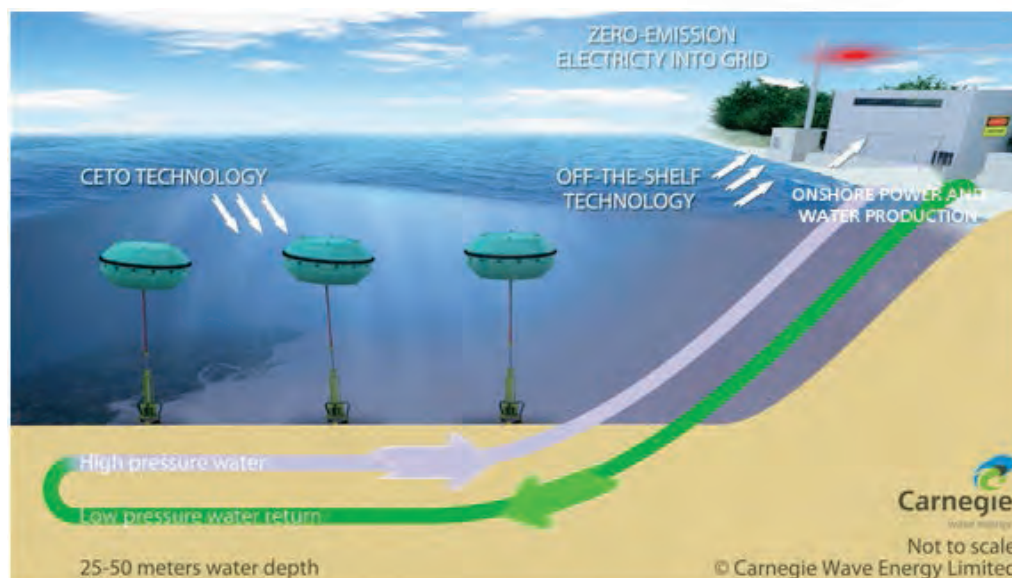
CETO technology characteristics include:

- 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 ('PWE') Fact File

- Upon completion, PWE 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.
- PWE 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 PWE.
- 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 (PWE) 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.

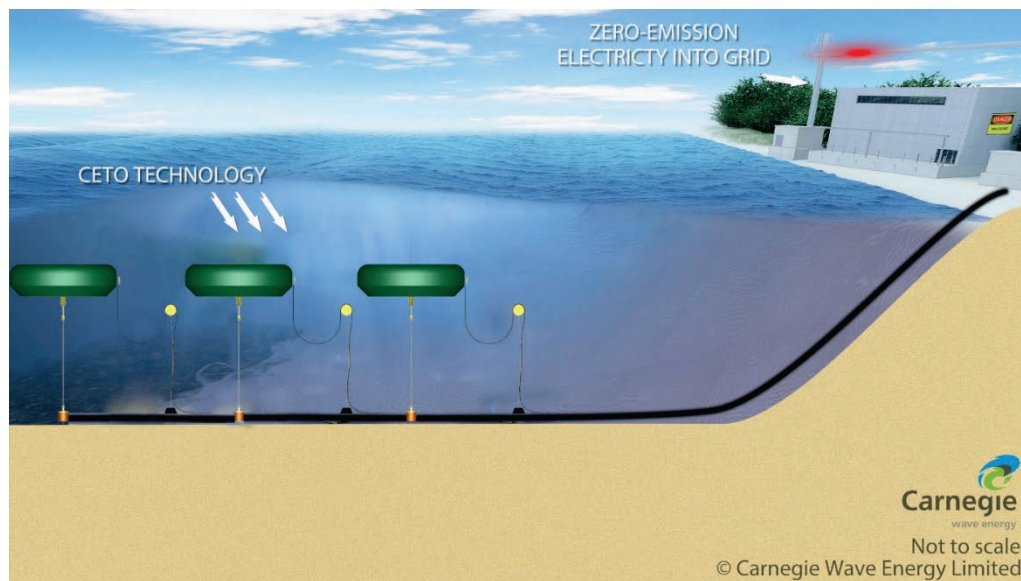


CETO 5 (Perth Wave Energy Project) Power & Water Schematic

CETO 6 Project Fact File

The CETO 6 unit will have a 1MW (1000kW) power capacity, some four times of the current CETO 5 generation being used in the Perth Project. It will also have superior efficiency, lower capital cost and reduced maintenance costs for sites where the array is located far from shore or in deeper water. CETO 6 will also incorporate the configuration option for the power generation system to be moved offshore and subsea rather than solely onshore as with the current CETO 5 generation. This option allows CETO to take advantage of deeper, more distant to shore wave resources which significantly increases the size of the commercial market for CETO.

- The Project comprises the design, construction, deployment and demonstration of three CETO 6 units in a grid-connected, up to 3MW peak installed capacity wave energy project at Garden Island, Western Australia.
- The CETO 6 Project is supported by \$11m in Australian Government funding through the Australian Renewable Energy Agency's Emerging Renewables Program.
- The CETO 6 Project is supported by a five year \$20 million loan facility from the Australian Clean Energy Finance Corporation.
- Utilises Carnegie's fully submerged and commercially proven CETO wave energy device.
- The clean, renewable energy generated by the Project will be sold to the Australian Department of Defence at Australia's largest naval base, HMAS Stirling, on Garden Island in Western Australia.



CETO 6 Project Power Schematic

For more information:

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Appendix 4C

Quarterly report for entities admitted on the basis of commitments

Introduced 31/3/2000. Amended 30/9/2001, 24/10/2005.

Name of entity

CARNEGIE WAVE ENERGY LIMITED

ABN

69 009 237 736

Quarter ended ("current quarter")

30 September 2014

Consolidated statement of cash flows

Cash flows related to operating activities		Current quarter \$A'000	Year to date (3 months) \$A'000
1.1	Receipts from customers	-	-
1.2	Payments for		
	(a) staff costs	(245)	(245)
	(b) advertising and marketing	(17)	(17)
	(c) research and development	(5,189)	(5,189)
	(d) leased assets	(9)	(9)
	(e) other working capital	(474)	(474)
1.3	Dividends received	-	-
1.4	Interest and other items of a similar nature received	114	114
1.5	Interest and other costs of finance paid	(3)	(3)
1.6	Income taxes refunded	57	57
1.7	Other -		
	(a) ERP, LEED and AusIndustry Grant Funding Receipts	100	100
	(b) Royalty Income	299	299
Net operating cash flows		(5,367)	(5,367)

+ See chapter 19 for defined terms.

Appendix 4C
Quarterly report for entities
admitted on the basis of commitments

	Current quarter \$A'000	Year to date (3 months) \$A'000
1.8 Net operating cash flows (carried forward)	(5,367)	(5,367)
Cash flows related to investing activities		
1.9 Payment for acquisition of:	-	-
(a) businesses (item 5)	-	-
(b) equity investments	-	-
(c) intellectual property	-	-
(d) physical non-current assets	(32)	(32)
(e) other non-current assets	-	-
1.10 Proceeds from disposal of:		
(a) businesses (item 5)	-	-
(b) equity investments	-	-
(c) intellectual property	-	-
(d) physical non-current assets	-	-
(e) other non-current assets	-	-
1.11 Loans to other entities	-	-
1.12 Loans repaid by other entities	-	-
1.13 Other (provide details if material)	-	-
	(32)	(32)
Net investing cash flows		
1.14 Total operating and investing cash flows	(5,399)	(5,399)
Cash flows related to financing activities		
1.15 Proceeds from issues of shares, options, etc.	-	-
1.16 Proceeds from sale of forfeited shares	-	-
1.17 Proceeds from borrowings	-	-
1.18 Repayment of borrowings	-	-
1.19 Dividends paid	-	-
1.20 Other – Proceeds from issue of convertible notes	-	-
	-	-
Net financing cash flows		
Net increase (decrease) in cash held	(5,399)	(5,399)
1.21 Cash at beginning of quarter/year to date	14,854	14,854
1.22 Exchange rate adjustments to item 1.20	-	-
1.23 Cash at end of quarter	9,455	9,455

Notes

- a. The cash at the end of the quarter excludes a quarterly royalty income payment of \$355,000 which will be paid in October.

+ See chapter 19 for defined terms.

Payments to directors of the entity and associates of the directors

Payments to related entities of the entity and associates of the related entities

		Current quarter \$A'000
1.24	Aggregate amount of payments to the parties included in item 1.2	245
1.25	Aggregate amount of loans to the parties included in item 1.11	-
1.26	Explanation necessary for an understanding of the transactions <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> Payments to Directors are consulting fees, salary and superannuation. </div>	

Non-cash financing and investing activities

- 2.1 Details of financing and investing transactions which have had a material effect on consolidated assets and liabilities but did not involve cash flows

Nil

- 2.2 Details of outlays made by other entities to establish or increase their share in businesses in which the reporting entity has an interest

Nil

Financing facilities available

Add notes as necessary for an understanding of the position. (See AASB 1026 paragraph 12.2).

		Amount available \$A'000	Amount used \$A'000
3.1	Loan facilities – Convertible note	3,950	3,950
3.2	Credit standby arrangements	-	-
3.3	Australian Government grant funding facilities	35,318	19,075

+ See chapter 19 for defined terms.

Reconciliation of cash

Reconciliation of cash at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts is as follows.	Current quarter \$A'000	Previous quarter \$A'000
4.1 Cash on hand and at bank	8,779	7,178
4.2 Deposits at call	-	7,000
4.3 Bank overdraft	-	-
4.4 Other (provide details) – <i>Guarantee facilities</i>	676	676
Total: cash at end of quarter (item 1.23)	9,455	14,854

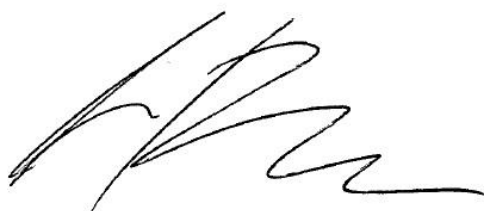
Acquisitions and disposals of business entities

	Acquisitions (Item 1.9(a))	Disposals (Item 1.10(a))
5.1 Name of entity	-	-
5.2 Place of incorporation or registration	-	-
5.3 Consideration for acquisition or disposal	-	-
5.4 Total net assets	-	-
5.5 Nature of business	-	-

Compliance statement

- 1 This statement has been prepared under accounting policies which comply with accounting standards as defined in the Corporations Act (except to the extent that information is not required because of note 2) or other standards acceptable to ASX.)
- 2 This statement does give a true and fair view of the matters disclosed.

Sign here:



Print name: AIDAN FLYNN Company Secretary

Date: 22 October 2014

+ See chapter 19 for defined terms.

Notes

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity wanting to disclose additional information is encouraged to do so, in a note or notes attached to this report.
2. The definitions in, and provisions of, *AASB 1026: Statement of Cash Flows* apply to this report except for the paragraphs of the Standard set out below.
 - 6.2 - reconciliation of cash flows arising from operating activities to operating profit or loss
 - 9.2 - itemised disclosure relating to acquisitions
 - 9.4 - itemised disclosure relating to disposals
 - 12.1(a) - policy for classification of cash items
 - 12.3 - disclosure of restrictions on use of cash
 - 13.1 - comparative information
3. Accounting Standards. ASX will accept, for example, the use of International Accounting Standards for foreign entities. If the standards used do not address a topic, the Australian standard on that topic (if any) must be complied with.

+ See chapter 19 for defined terms.