

#### **ASX Announcement**

Thursday, 30 April 2015

## Report to Shareholders for the Quarter Ended 31st March 2015

#### **ACTIVITIES SUMMARY**

During the quarter, Carnegie Wave Energy Limited (ASX: CWE) achieved a number of important milestones on its flagship Perth Wave Energy Project (Perth Project), including the connection to the electricity grid at HMAS Stirling, the third and final CETO 5 unit being successfully installed and operational hours now in excess of 7,500 hours. Progress was also made with the next generation CETO 6 development and with Carnegie's 100% owned subsidiaries in Chile and the UK.

Highlights from the quarter include:

- > Third and final CETO 5 unit installed and operating
- Perth Project grid connected and generating power
- > Total cumulative CETO 5 operation hours now in excess of 7,500 hours
- Perth Project performance analysis commenced and results positive
- > Desalination pilot plant commissioned off electricity grid
- Agency agreement signed to develop CETO desalination projects in Chile
- CWE Chile and CWE UK activities progress
- CETO 6 progress

#### 1. Perth Wave Energy Project

#### Perth Project Grid Connected

The Perth Project achieved a significant milestone during the quarter by becoming the world's only currently operating, grid-connected wave energy project. The Project was officially "switched-on" by the Australian Federal Minister for Industry and Science, the Hon. Ian Macfarlane MP and the Commanding Officer of HMAS Stirling, Captain Angela Bond.

During his launch address, Minister Macfarlane referred to the Project as "great evidence of a commercial success in renewable energy. This type of practical application will guide future development of Australia's renewable energy sector."



#### Three CETO 5 Units Operating for over 7,500 hours

The third CETO 5 unit was installed at the Project site during the quarter and has been operating alongside the previously installed two CETO 5 units. The units have been operating together in an array for over 1,000 hours. During the over 7,500 cumulative operational hours. the units have experienced a range of sea states, including waves up to 4m in height.

During this operational period, Carnegie has also been undertaking a number of operational and maintenance activities including: offshore inspections, monitoring of working fluid cleanliness and the maintenance of onshore plant and equipment.



The three unit CETO 5 array operating off Garden Island, Western Australia

Preparations have now commenced to retrieve CETO Unit 1 and Pod 1 for a complete strip down, inspection and overhaul. These activities allow for more informed operation and maintenance activities ahead of winter and include the removal of biofouling, inspection of seals in the CETO pump, inspection of bearings in the load path components and repair of some failed instrumentation. Importantly, the retrieval of CETO Unit 1 provides an opportunity to verify the retrieval method which is a key input into the ongoing operating philosophy associated with the Perth Project and CETO 6. The retrieval itself is planned to occur in the coming weeks, subject to suitable weather conditions.

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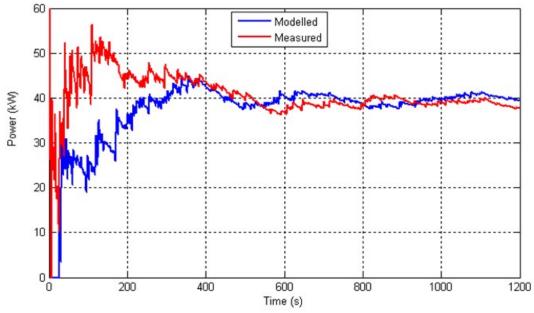


#### Performance

The primary purpose of the Perth Project is validation of the CETO 5 generation of Carnegie's proprietary wave technology, in order to make the CETO 6 design as efficient and as low cost as possible. Carnegie's design process for CETO primarily involves the development of sophisticated numerical or computational models that allow the simulation of CETO in real wave environments. The modelling enables design concepts to be tested rapidly without the risk and cost associated with ocean deployments. However, it is essential that real operational data is collected, analysed and used to calibrate these models to ensure that they are valid.

In order to effectively assess the performance of the CETO 5 unit, Carnegie has equipped the CETO units and the balance of plant with approximately 500 sensors generating 4 GB of data per day. This allows performance data such as pressure, flow, displacement, power, load, position and the like to be recorded and transmitted. This data is also used by the Process Control System and the Plant Operators to control the units and system response to optimise the overall performance of the plant. This optimisation process is now underway for the Perth Project.

As mentioned to date, the CETO Unit and system performance has been in line with expectations. An example of some initial measured performance analysis and comparison with modelled forecast performance is provided below for a sea state of Hs 2.4 m. The 40 kW measured output of a single CETO 5 unit aligns well with that forecast by Carnegie's computational models and provides early confirmation of the CETO 5 Unit's power output.



**Example of Modelled vs. Measured Performance showing good convergence** 



#### Desalination Plant Commissioned off grid electricity

The desalination pilot plant co-located on Garden Island was also commissioned during the quarter off the grid at HMAS Stirling. The desalination pilot plant is initially running off the grid electricity at HMAS Stirling to establish baseline data for comparison against the wave energy desalination process. The freshwater supplied to HMAS Stirling will be purchased by the Department of Defence under the terms of the existing Water Supply Agreement with Carnegie.

#### 2. **Corporate Activities**

#### Milestone Payments

During the quarter, Carnegie received milestone payments of \$1.35 million were received from the Australian Renewable Energy Agency (ARENA) and from the WA State Government under the LEED fund for the completion of the onshore plant on Garden Island.

#### R&D Tax Refund

Carnegie received a \$3.9m cash rebate under the Research and Development Tax Incentive, which is a mechanism to support and encourage Australian companies to undertake Australian research and development. The cash rebate was calculated based on Carnegie's eligible R&D expenditure for the financial year ended 30 June 2014.

#### Financial Close on CEFC CETO 6 Funding

During the quarter, Carnegie reached financial close with the Clean Energy Finance Corporation's (CEFC) \$20 million, five year loan facility. The funding from the CEFC will be used to support the development of the CETO 6 project, also located off Garden Island. This facility reduces the amount of equity required by Carnegie to further advance the Project, with an additional \$11 million grant from ARENA supporting the Project.



Carnegie Chief Financial Officer, Aidan Flynn and CEFC CEO, Oliver Yates on site at Henderson, WA

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## Carnegie

#### South American Business Developments

Carnegie's 100% owned subsidiary, CWE Chile has been pursuing a number of relationships to develop CETO wave power and desalination projects in Chile and during the quarter signed an Agency Agreement with MAK Industrial Water Solutions (MAK Water) to act as Carnegie's exclusive agent for South America. The Agency Agreement allows Carnegie to act as an agent for MAK Water's products throughout the South American market. The containerised desalination pilot plant for the Perth Project was supplied by MAK Water.

In addition to the agency agreement with MAK Water, Carnegie has also signed a collaboration agreement with Fundación Chile (FCH) to collaborate on identifying a development pathway for commercial wave energy projects in Chile.

#### **CWE UK Activities Update**

Carnegie has strengthened its presence in the United Kingdom through its 100% owned subsidiary, CWE UK with ongoing site development activities in Cornwall as part of the CETO 6 WaveHub project as well as collaborative R & D activities. During the quarter, the newly appointed CEO of CWE UK provided an update on activities to the Renewable UK Conference & Exhibition held in Edinburgh.

Extensive CETO 6 wave tank testing was also carried out at FloWave's Ocean Energy Testing facility in Edinburgh. The results of this testing has confirmed Carnegie's confidence with the progression of the CETO 6 unit design, as results showed the tests to have excellent agreement with numerical modelling, including power output, loads and motions.



CETO 6 wave tank testing, Edinburgh, UK

#### Legacy Gold Royalty Payments

Carnegie also received \$402,744 during the quarter from its historical mining royalty held in the Higginsville Gold Operations. This payment takes the total funds received from the mining royalty to \$2.7 million. The cash payments will be ongoing, dependent on future production and economic viability of future mining activities. This payment requires no expenditure or resources from Carnegie.



#### **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. Carnegie has subsidiaries established in the UK. Chile and Ireland focussed on commercial exploitation opportunities in key target markets.

#### **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. The technology is capable of generating power onshore or offshore depending upon the specific characteristics of a project site.

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 ('PWEP') Fact File

- PWEP is the world's first commercial-scale CETO grid and desalinated water connected wave energy project.
- The Perth Wave Energy Project is supported by \$13.1m funding from the Australian Renewable Energy Agency.
- PWEP 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 PWEP.
- 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 operated in the Perth Wave Energy Project (PWEP) 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.

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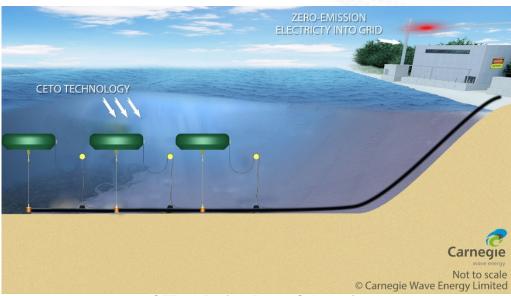
CETO 5 (Perth Wave Energy Project) Power & Water Schematic

#### **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 form 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** 

#### **About ARENA**

ARENA was established by the Australian Government to make renewable energy technologies more affordable and increase the amount of renewable energy used in Australia. ARENA invests in renewable energy projects, supports research and development activities, boosts job creation and industry development, and increases knowledge about renewable energy. ARENA is currently supporting more than 200 projects and is actively seeking new projects to support.

#### For more information:

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bnRule 4.7B

### Appendix 4C

# Quarterly report for entities admitted on the basis of commitments

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

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CARNEGIE WAVE ENERGY LIMITED	
ABN	Quarter ended ("current quarter")

69 009 237 736

31 March 2015

#### Consolidated statement of cash flows

Cash	flows related to	operating activities	Current quarter \$A'000	Year to date (9 months) \$A'000
1.1	Receipts from o	customers	-	-
1.2	<ul> <li>(b) advertising and marketing</li> <li>(c) research and development</li> <li>(d) leased assets</li> <li>(e) other – corporate overheads &amp;</li> </ul>		(731) (14) (2,852) (9) (573)	(1,345) (59) (12,039) (26) (1,525)
working capital  1.3 Dividends received  1.4 Interest and other items of a similar nature received  1.5 Interest and other costs of finance paid  1.6 Income taxes refunded  1.7 Other -  (a) ERP, LEED and AusIndustry Grant Funding Receipts (b) Royalty Income		53 (5) 3,907 502 285	198 (10) 3,963 1031 939	
	Net operating	cash flows	563	(8,873)

#### Notes

a. The staff costs (a) exclude payroll related to research and development activities, those payroll costs are included in research and development (c).

<sup>+</sup> See chapter 19 for defined terms.

		Current quarter \$A'000	Year to date (9 months) \$A'000
1.8	Net operating cash flows (carried forward)	563	(8,873)
	Cash flows related to investing activities		
1.9	Payment for acquisition of:	-	-
	(a) businesses (item 5)	-	-
	(b) equity investments	-	-
	(c) intellectual property	(16)	- (5.4)
	<ul><li>(d) physical non-current assets</li><li>(e) other non-current assets</li></ul>	(16)	(54)
1.10	Proceeds from disposal of:	-	-
1.10	(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)	-	-
	Net investing cash flows	(16)	(54)
1.14	Total operating and investing cash flows	547	(8,927)
	Cook flows related to financing activities		
1.15	Cash flows related to financing activities Proceeds from issues of shares, options, etc.	297	597
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	297	597
	Net increase (decrease) in cash held	844	(8,330)
	Net increase (decrease) in cash held		
1.21 1.22	Cash at beginning of quarter/year to date Exchange rate adjustments to item 1.20	5,680	14,854 -

#### **Notes**

- b. The cash at the end of the quarter excludes the following cash receipts:
  - A government grant payment of \$1.3m which related to work during the previous 12 months was received on 17 April 2015.
  - A royalty income payment of \$402,744 for the quarter ended 31 March 2015 which was received on 30 April 2015.

Appendix 4C Page 2 24/10/2005

<sup>+</sup> 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	278
1.25	Aggregate amount of loans to the parties included in item 1.11	-
1.26		

1.26 Explanation necessary for an understanding of the transactions

Payments to Directors are consulting fees, salary and superannuation.

#### 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 Notes & Senior Debt Facility	23,790	3,790
3.2	Credit standby arrangements	-	-
3.3	Australian Government grant funding facilities	35,318	19,993

c. The loan facilities includes a \$20 million senior debt loan facility with the Australian Clean Energy Finance Corporation which reached financial close on the 25 January 2015 and which has not yet been drawn upon. The Facility expires on 18 March 2019.

<sup>+</sup> See chapter 19 for defined terms.

#### Reconciliation of cash

show	nciliation of cash at the end of the quarter (as n in the consolidated statement of cash flows) to elated items in the accounts is as follows.	Current quarter \$A'000	Previous quarter \$A'000
4.1	Cash on hand and at bank	1,848	2,504
4.2	Deposits at call	4,072	2,572
4.3	Bank overdraft	-	-
4.4	Other (provide details) – Guarantee facilities	604	604
	Total: cash at end of quarter (item 1.23)	6,524	5,680

#### 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: 30 April 2015

**Notes** 

Appendix 4C Page 4 24/10/2005

<sup>+</sup> See chapter 19 for defined terms.

- 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.

<sup>+</sup> See chapter 19 for defined terms.