

## ASX Announcement

31 July 2014



### Report to Shareholders for the Quarter Ended 30<sup>th</sup> June 2014

#### ACTIVITIES SUMMARY

During the quarter Carnegie Wave Energy Limited (ASX: CWE) focused primarily on its Perth Wave Energy Project (the Perth Project) with the CETO unit assembly and test phase, delivery of the desalination plant to the Garden Island onshore site and the construction of the onshore power plant and grid connection. Carnegie also progressed its CETO 6 Project including being awarded a new grant of \$11m from the Australian Renewable Energy Agency (ARENA) and announcing that the first CETO 6 Project would be located at Garden Island, Western Australia.

Highlights from the quarter include:

- CETO Unit assembly and onshore testing phase ahead of post-winter commissioning with first operational results available prior to end of 2014.
- Desalination Plant delivered to Garden Island, installation of the ocean outfall pipeline and commissioning commenced.
- Closing quarterly cash balance of \$14.9m having completed an oversubscribed \$9.4m capital raise.
- Awarded a new \$11m grant from ARENA to support the CETO 6 Project and to match \$20m CEFC debt facility.
- Awarded a berth at WaveHub in the UK for a subsequent CETO 6 Project.
- New research relationships with CSIRO and University of Adelaide.
- Received grant funding payments of \$5.7m for the Perth Project during the quarter.
- PWEP Buoyant Actuators unveiled by the Australian Federal Energy Minister.



**CETO Buoyant Actuator and Pump assembly at onshore test site at Henderson, Western Australia**

## 1. Perth Wave Energy Project

### ***CETO Unit Assembly and Test Phase***

During the quarter, Carnegie has continued to progress through the CETO unit assembly and test phase for the Perth Wave Energy Project. The assembly and testing to date has been focused on the buoyant actuators, pumps, energy relief system, tethers, connectors and hydraulic pods, as well as the installation and testing of instrumentation equipment across all components of the plant.

Testing is progressing well and includes: system pressure, flow and leakage; pump connector fit and articulation, buoyant actuator deployment system, ballasting and deballasting; process control and instrumentation communications, data acquisition and system integration; desalination plant operation; and CETO unit installation testing.

Carnegie decided to extend the period of pre-deployment testing through the winter months to allow detailed testing in advance of planned system commissioning in the optimum post-winter weather period. The extension of the assembly and pre-installation testing phase will allow CETO unit installation and any initial fault finding to occur outside of the larger winter swells which are currently being experienced off the west coast of Garden Island. These reduce significantly through September and October, thereby increasing the opportunity and lowering the risk associated with any required intervention after installation. This still allows the first project operational results to be available before the end of 2014.



**Pump Assembly Onshore Testing**

### ***Buoyant Actuators Unveiled by Federal Energy Minister***

In April, the three CETO 5 Buoyant Actuators for the Perth Project were unveiled by the Hon Ian Macfarlane MP, Federal Energy Minister and Ivor Frischknecht, CEO of ARENA, the Federal Government's Renewable Energy funding agency. The buoys were delivered to BAE Systems, the Project's pre-deployment location, where the CETO units are now undergoing assembly and the pre-installation testing phase.





**Buoyant Actuators Unveiled at BAE Systems, Henderson WA by Ivor Frischknecht, CEO of ARENA, Hon Ian Macfarlane MP, Federal Energy Minister and Carnegie's Managing Director and Chairman**

### ***Desalination Pilot Plant Progress***

During this quarter, the CETO desalination pilot plant was delivered to Garden Island and installed onsite, following completion of manufacturing and Factory Acceptance Testing by MAK Industrial Water Solutions. The desalination pilot plant has been connected to the seawater intake bore and storage tanks and the water delivery pipe has been installed, connecting the desalination plant to the Australian Government Department of Defence (Defence) water supply system. The ocean outfall pipeline has also now been installed.

Commissioning of the desalination plant off electricity supply has now commenced and the first freshwater (permeate) has been produced. Commissioning will complete shortly and will include meeting Department of Water potable water guidelines.



**Perth Wave Energy Project pipelines connected to the power house and desalination plant, Garden Island, WA**

### ***Perth Project plays key part in new ARENA funded CSIRO Project***

Carnegie Wave Energy Limited 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 Wave Energy Project, off Garden Island in Western Australia, 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 announced further details of the CETO 6 Project development, including the award of \$11m in new grant funding from the Australian Renewable Energy Agency for a CETO 6 Project on Garden Island, Western Australia as well as the award of a CETO 6 commercial site at WaveHub, a pre-consented, grid-connected wave energy demonstration facility in the UK. Carnegie 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.

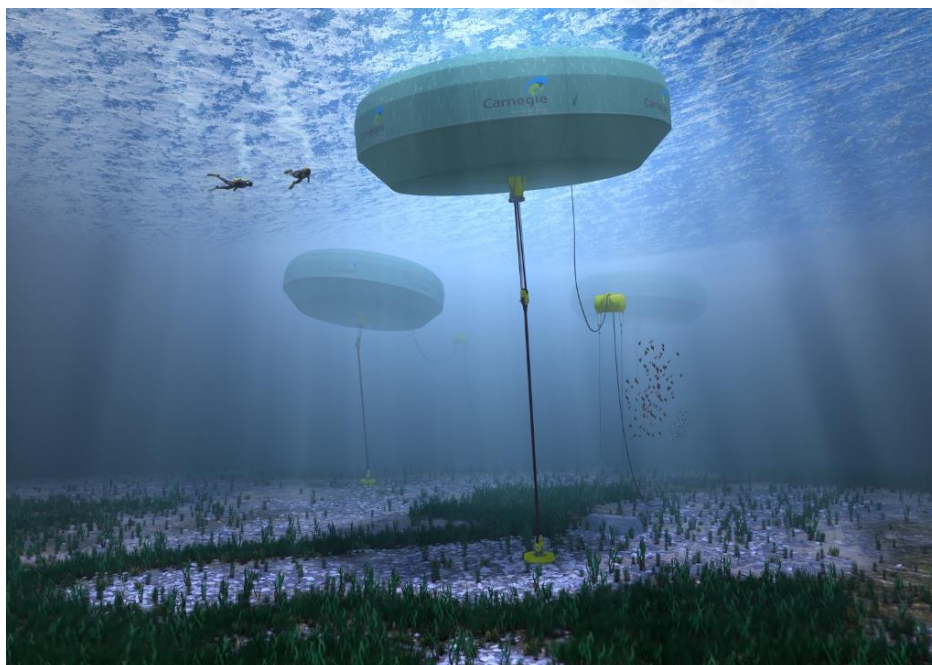
### ***CETO 6 Project Funding Awarded***

In June, the Australian Federal Government's Australian Renewable Energy Agency (ARENA) awarded Carnegie \$11m in funding to support the first CETO 6 Project which will be located at Garden Island, Western Australia. This is matched by the \$20m five year loan facility from the Clean Energy Finance Corporation previously announced in March this year.

The securing of this combined funding now allows Carnegie to confirm Garden Island as the location of its first CETO 6 project. All the power generated from the project will be bought by the Australian Department of Defence under Carnegie's existing power supply agreement for use at HMAS Stirling, Australia's largest naval base which is located on Garden Island.

The CETO 6 Project will be up to 3MW in capacity and, based on the recent design work, is expected to have a total cost of \$31m including design and contingency but excluding corporate payroll and overheads. Design work on the Project has been underway since 2013.

The CETO 6 unit in the Project has a target power capacity of 1MW (1000kW), some four times the current CETO 5 generation being used in the Perth Project. The increased capacity, combined with superior efficiency, delivers significantly reduced power costs and, when deployed at large commercial scale, aims to be cost competitive in a range of markets globally.



**Impression of the CETO 6 Project**

### ***Commenced 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.

### **3. CETO Wave Energy European Activities**

#### ***CETO 6 WaveHub Project***

During the last quarter, Carnegie was awarded a wave energy berth at the WaveHub purpose built wave energy demonstration facility in Hayle, Cornwall, south west England. This provides a pre-consented, constructed and grid connected berth at the dedicated wave energy demonstration site funded by the UK Government with existing infrastructure (subsea cables, onshore power substation, grid connection etc.) and incentives (wave energy feed-in tariff of approximately \$500/MWh).



CWE UK signed a Commitment Agreement for the final berth at WaveHub to support an up to 10MW grid connected CETO 6 commercial demonstration project. Carnegie was awarded the final berth at the facility following successful completion of due diligence by DNV GL on Carnegie and the CETO technology.



**Carnegie's European Executive Director, Kieran O'Brien & Managing Director of Wave Hub, Claire Gibson signing the commitment agreement**

#### **4. Corporate Activities**

##### ***Completed \$9.35m Capital Raise***

In April Carnegie completed an oversubscribed \$9.35m capital raise via a Share Purchase Plan (SPP) and Private Placement. The funds from the capital raise will be used for the design and development of the CETO 6 Project and working capital purposes.

##### ***Carnegie selected as semi-finalist in the Australian Technologies Competition***

Carnegie is one of only two ASX-listed companies to be selected as a semi-finalist among 228 entries. Carnegie was chosen as a semi-finalist as Carnegie's proprietary CETO technology has been identified as an industry leader with innovative characteristics and with the capability to become a game-changer in the energy sector.

##### ***Government Grant Payments***

###### ***Australian Federal Government ARENA Grant Payments***

During this quarter, Carnegie received grant payments totalling \$4,304,073 from the Australian Federal Government for the completion of milestones for the Perth Project. Carnegie received payments of:

- \$1,076,713 for the Foundation System

- \$89,208 for the Onshore Plant
- \$2,003,831 for the Pipeline
- \$1,134,320 for the CETO units

#### *Western Australian State LEED Grant Payments*

During this quarter, Carnegie received grant payments totalling \$1,258,737 from the Western Australian State Government for the completion of milestones for the Perth Project. Carnegie received payments of:

- \$676,871 for the Pipeline
- \$581,866 for the CETO Units

#### *AusIndustry Desalination Grant Payment*

In June, Carnegie received a quarterly grant payment of \$143,436 as part of a \$1.27m AusIndustry grant that supports the design, construction and operation of a CETO wave powered desalination pilot plant which will desalinate seawater to produce freshwater.

This is the fifth quarterly payment received and takes the total funds received to date to \$949,096 which represents 100% of the construction portion of the grant funding.

#### *Total Grant Funding for Perth Project to Date*

The Perth Project has received \$16.3m in cash grant payments as of 30 June 2014 from the Australian and Western Australian State Government under the ARENA, LEED and AusIndustry Grants.

### ***International Presentations***

#### *Environmental Interactions of Marine Renewables Conference*

A presentation was delivered by Environment and Planning Advisor, Edwina Davies Ward, at the Environmental Interactions of Marine Renewables (EIMR-II) Conference, held in Stornoway on the Isle of Lewis, Scotland in May.

#### *All Energy Aberdeen Conference*

Carnegie's Project Development Officer, Tim Sawyer, delivered a presentation in May at the All Energy Aberdeen Conference, the UK's largest renewable energy event.

### **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:

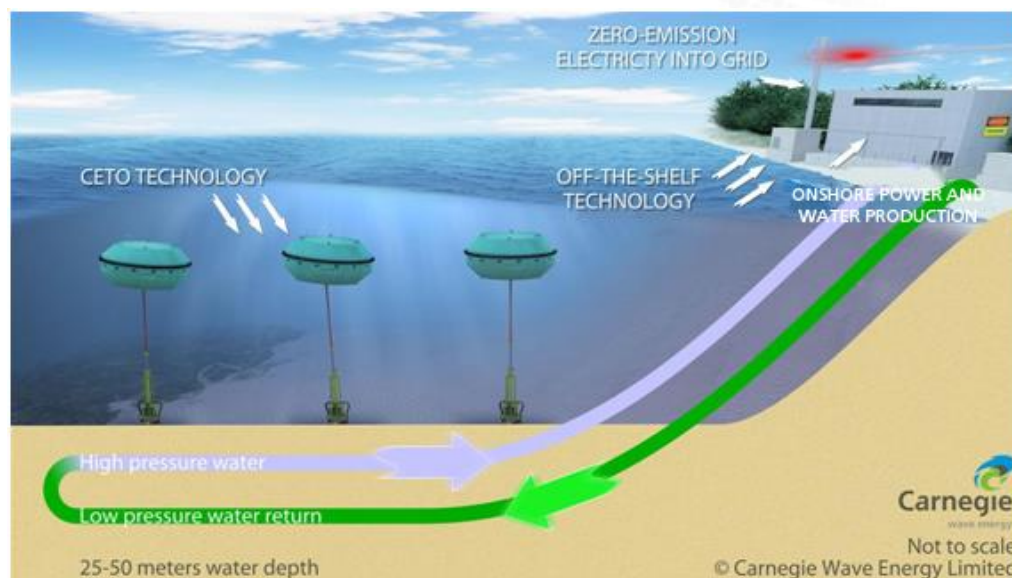
- Converts ocean wave energy into zero-emission electricity and desalinated water.
- Environmentally friendly, has minimal visual impact and attracts marine life.
- Fully-submerged in deep water, away from breaking waves and beachgoers, and unaffected by storms.

### **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.



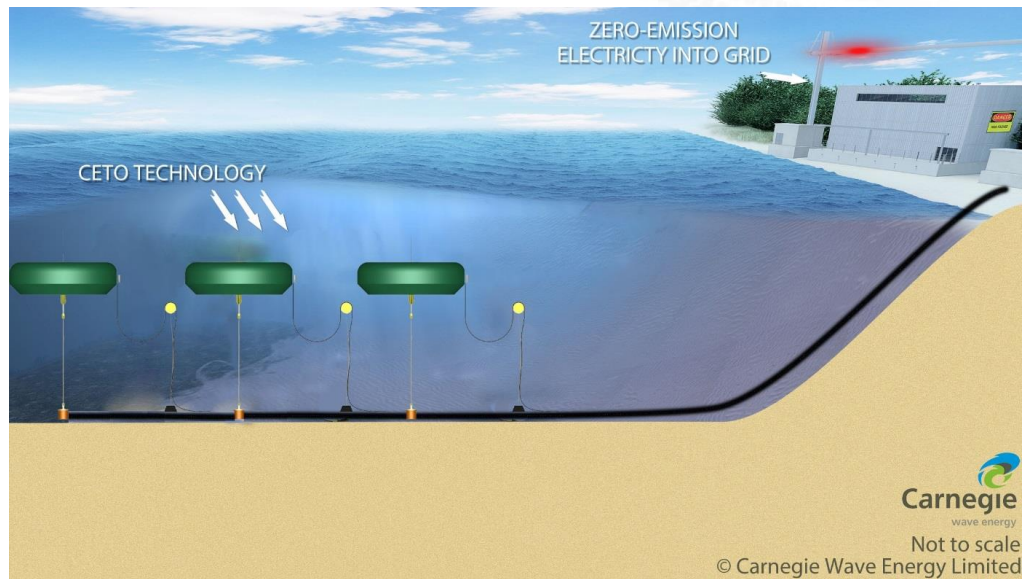


**CETO 5 (Perth Wave Energy Project) Power & Water Schematic**

### **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 June 2014

### Consolidated statement of cash flows

Cash flows related to operating activities		Current quarter \$A'000	Year to date (12 months) \$A'000
1.1	Receipts from customers	-	-
1.2	Payments for		
	(a) staff costs	(539)	(1,508)
	(b) advertising and marketing	(35)	(113)
	(c) research and development	(5,221)	(25,053)
	(d) leased assets	(6)	(6)
	(e) other working capital	(238)	(1,520)
1.3	Dividends received	-	-
1.4	Interest and other items of a similar nature received	50	265
1.5	Interest and other costs of finance paid	(10)	(10)
1.6	Income taxes refunded	-	2,264
1.7	Other -		
	(a) ERP, LEED and AusIndustry Grant Funding Receipts	5,733	14,048
	(b) Royalty Income	372	1,323
<b>Net operating cash flows</b>		<b>106</b>	<b>(10,310)</b>

+ 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 (12 months) \$A'000
1.8 Net operating cash flows (carried forward)	106	(10,310)
<b>Cash flows related to investing activities</b>		
1.9 Payment for acquisition of:	-	-
(a) businesses (item 5)	-	-
(b) equity investments	-	-
(c) intellectual property	-	-
(d) physical non-current assets	(64)	(122)
(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)	-	-
	<b>(64)</b>	<b>(122)</b>
<b>Net investing cash flows</b>		
<b>1.14 Total operating and investing cash flows</b>	<b>42</b>	<b>(10,432)</b>
<b>Cash flows related to financing activities</b>		
1.15 Proceeds from issues of shares, options, etc.	9,293	9,283
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	-	3,806
	<b>9,293</b>	<b>13,089</b>
<b>Net financing cash flows</b>		
<b>Net increase (decrease) in cash held</b>	<b>9,335</b>	<b>2,657</b>
1.21 Cash at beginning of quarter/year to date	5,519	12,197
1.22 Exchange rate adjustments to item 1.20	-	-
1.23 <b>Cash at end of quarter</b>	<b>14,854</b>	<b>14,854</b>

**Notes**

+ 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	342
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>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	18,975

+ 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	7,178	4,943
4.2 Deposits at call	7,000	-
4.3 Bank overdraft	-	-
4.4 Other (provide details) – <i>Guarantee facilities</i>	676	576
<b>Total: cash at end of quarter (item 1.23)</b>	<b>14,854</b>	<b>5,519</b>


## 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: GRANT J. MOONEY Company Secretary

Date: 31 July 2014

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+ 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.

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