



3 November 2016

Companies Announcement Office  
ASX Limited  
Exchange Centre  
Level 4, 20 Bridge Street  
Sydney, NSW 2000

**Cortical Dynamics Ltd – Results of Australian Technology Competition**

Please find attached an update from BPH Energy Ltd (ASX: BPH) investee company Cortical Dynamics Ltd regarding the success of Cortical in the Australian Technology Competition.

BPH Energy currently holds 3.89% of Cortical Dynamics and has the option to increase its holding to in excess of 10% through the conversion of its secured loan.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "D Ambrosini".

Deborah Ambrosini  
Company Secretary

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3 November 2016

BPH Energy Limited  
14 View Street  
North Perth, WA 6006

### **CORTICAL DYNAMICS WINS ADVANCED MANUFACTURING AWARD**

Cortical Dynamics Limited (“**Cortical**”) is pleased to advise that it has been announced as the winner of the Advanced Manufacturing category at the Australian Technologies Competition (ATC) awards dinner last night in Sydney.

Cortical was also announced the Runner Up Australian Technology Company of the Year and Runner Up in the Med Tech and Pharma category.

Cortical Chairman Mr David Breeze said “This is truly an exciting time for Cortical. The accolades received in this competition further validate this innovative technology. In an extremely competitive field of Australia’s best technology companies we are delighted to have been chosen as Runner Up Australian Technology Company of the Year after over 130 companies were considered for this award”.

Cortical was chosen as one of three finalists in the Medtech and Pharma award and as one of three in the further category for Advanced Manufacturing.

The finalists are leading Australia’s creation of new knowledge and skills intensive industries that will forge Australia’s position in global high-tech markets.

Now in its sixth year, the ATC finds mentors and develops Australia's best technology companies with the Greatest Global Potential. The ATC16 Business Accelerator helps turn good technologies into great businesses.

#### **About the Australian Technologies Competition**

The 2016 ATC has established itself as Australia's premier technology accelerator. The competition provides mentoring for innovative SMEs and awards those who are best positioned to become global success stories.

Over the last five years, the competition has generated over \$250 million dollars in investment and project opportunities for Australian SMEs. It has attracted over 700 entries and 125 companies have so far benefitted from the mentoring program.

Australian and international government partners of the ATC include the Australian Department of Industry, Innovation and Science, the City of Melbourne, the NSW Department of Industry, Hong Kong Trade & Development Council and UK Trade & Investment.

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#### **Cortical Dynamics Ltd**

ACN 107 557 620

PO box 317, North Perth, WA, 6906

14 View Street, North Perth, Western Australia

T: + 61 8 6467 9525 F: +61 8 9328 8733

[contact@corticaldynamics.com](mailto:contact@corticaldynamics.com) [www.corticaldynamics.com](http://www.corticaldynamics.com)

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Please see attached press release for further details.

Yours sincerely,

A handwritten signature in black ink that reads "D. Breeze". The signature is fluid and cursive, with the first name "D." and the last name "Breeze" clearly visible.

David Breeze  
Chairman  
Cortical Dynamics Ltd

### **About Cortical**

Cortical is an Australian based medical device technology company that has developed a next generation Brain Function Monitor (BAR). The core-product the BAR monitor has been developed with the objective of better detecting the effect of anaesthetic agents on brain activity, aiding anaesthetists in keeping patients optimally anaesthetised.

The BAR monitor improves on currently used electroencephalogram (EEG) technologies by incorporating the latest advances in understanding of how the brain's rhythmic electrical activity, the EEG, is produced. The approach used is fundamentally different from all other devices currently available in the market in that its underlying algorithm produces EEG indexes which are directly related to the physiological state of the patient's brain.

The global brain monitoring market in 2012 was valued at \$1.08 billion and is poised to grow at a CAGR of 8.6% to reach \$1.63 billion by 2017. The global brain monitoring devices market is broadly segmented into three categories based on its product, application, and end-user. Fueling market growth is the various technological advancements which are leading to high functionality, lower costs, ease of operation, and miniaturization of devices. Initial marketing will focus on TIVA (Total Intravenous Anaesthesia), a method of inducing and maintaining general anaesthesia without the use of any inhalation agent. This is becoming more widely accepted, particularly in Western Europe.

Cortical's technology has a versatility that goes beyond depth of anaesthesia and may be applied to other EEG based markets, such as Neuro-diagnostic, drug discovery, drug evaluation and the emerging Brain Computer Interface (BCI) market.

There are considerable opportunities offered by subsequent expansion of the company's core technology through developing the product to carry out additional functions including neuro-diagnostics of changes in brain and memory functions to provide early warning of degenerative diseases, pain response and tranquiliser monitoring for trauma patients in intensive care units.

The BAR monitor is protected by five patent families in multiple jurisdictions worldwide consisting 22 granted patents.

### **About the BAR Monitor**

The BAR monitoring system measures a patient's brain electrical activity, the electroencephalogram (EEG), in order to indicate how deeply anaesthetised a patient is during an operation via an adhesive sensor applied to the forehead. The BAR monitor is designed to assist anaesthetists and intensive care staff in ensuring patients do not wake unexpectedly, as well as reducing the incidence of side effects associated with the anaesthetic. Cortical believes that the BAR monitoring system will offer many significant sustainable competitive advantages to key stakeholders including the patients, the anaesthetists, and the hospitals/day clinics. These advantages may reduce the risks associated with surgical procedures, increase levels of patient care, optimize the use of anaesthetic agents, increase efficiencies and reduce costs through a reduction in drug usage and a faster bed turnaround in the theatre and post-operative recovery rooms around the globe.

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The electrical activity recorded from the scalp, the EEG, is amongst the most important quantifiable measures of brain function. Unsurprisingly, EEG is used to monitor brain function in a variety of clinical situations such as neurological diagnosis, where the EEG is analysed for early signs of degenerative diseases, or within the operating room, where the EEG is used to indicate the depth of anaesthesia within the surgical patient.

Such monitoring is now gaining significant use during surgery, however even with the use of EEG monitors, it is not uncommon for there to be a critical imbalance between the patient's anaesthetic requirements and the anaesthetic drugs administered. While a number of EEG monitors are commercially available, one that is reliably able to quantify the patient's anaesthetic state is still desperately needed.

Prior to the development of the BAR monitor, all of the existing EEG based depth of anaesthesia monitors operate in the context of a number of well documented limitations:

- \_ Inability to monitor the analgesic effects; and
- \_ Not all hypnotic agents are reliably measured.

The above limitations highlight the inadequacies in existing EEG based depth of anaesthesia monitors, particularly given surgical anaesthesia requires both hypnotic and analgesic agents.



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