



1<sup>st</sup> July 2019

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

Dear Sir/Madam

### **Cortical Dynamics -Further trials**

BPH Energy Ltd (“BPH”) wishes to advise the market on further trials to occur for the BARM System of investee Cortical Dynamics Ltd (“**Cortical**”)

BPH is pleased to announce that Sydney Adventist Private Hospital in Sydney has commenced trialling the Brain Anaesthesia Response Monitoring System known as “BARM”. The trial will continue through to the second week of July 2019.

In addition to this trial, LiDCO Ltd UK, has agreed to trial the “BARM” at Southampton University Hospital during the months of July to September 2019. In the UK, the LiDCO Group enjoys a leading market share, with over 50% of NHS acute care hospitals using its technology.

Yours sincerely,

A handwritten signature in black ink, appearing to read "D. Breeze".

David Breeze  
Executive Director

#### **About the BARM System**

The Brain Anaesthesia Response (BARM) 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 BARM System 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.

## About Cortical

Cortical is an Australian based medical device technology company that has developed a next generation Brain Function Monitor. The company is focused on commercialising the intellectual property developed at Swinburne University. The core-product the Brain Anaesthesia Response (BARM) System 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 BARM System improves on currently used electroencephalogram (EEG) technologies by incorporating the latest advances in our understanding of how the brain's rhythmic electrical activity, the electroencephalogram (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 and reach \$1.63 billion by 2020. 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.

Cortical will initially focus on the Total Intravenous Anaesthesia ("TIVA") market within Europe. TIVA provides a method of inducing and maintaining general anaesthesia without the use of any inhalation agents.

The English healthcare body NICE (National Institute for Health and Care Excellence) has recommended EEG (electroencephalogram) based depth of anaesthesia monitors as options in patients receiving TIVA and in patients who are considered at higher risk of adverse outcomes during any type of general anaesthesia.

This includes patients at higher risk of unintended awareness and/or excessively deep anaesthesia. It has been estimated that approximately 29 million major general surgery general anaesthetics are conducted in the EU each year of which 55% are balanced anaesthesia (using a combination of intravenous agents such as propofol and volatile gases) and 20% are total intravenous anaesthesia (TIVA) using propofol. In Italy the Society of Intravenous Anaesthesia has reported that TIVA usage has already reached 40% of all anaesthesia procedures.

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 tranquilizer monitoring for trauma patients in intensive care units.

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. The specific advantages of Cortical's BARM System over all other competing systems include: It produces EEG indexes which are based on physiological mechanisms direct from the patient, unlike other systems on the market which produces EEG indexes based on statistically based empirical approaches.

It is therefore fundamentally differentiated from the competitive technologies. It produces a reading within 3 seconds of start-up and an updated reading every second thereafter, compared to 30 second updates on competing systems. It has shown to be able to monitor hypnosis and analgesia independently by EEG. It provides much greater sensitivity, allowing the monitor to identify changes in brain function and detect several classes of anaesthesia and other brain disorders.

The BARM System is protected by five patent families in multiple jurisdictions worldwide consisting 22 granted patents

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