

ASX Announcement (ASX:AXE)

18 April 2018

## Archer to develop carbon-based battery technology with The University of New South Wales

### Highlights

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- Collaboration Agreement and Research Service Agreement with The University of New South Wales to focus on carbon-based energy storage technology.
  - The research will seek to develop graphite and graphene-based materials for lithium-ion batteries, potentially generating technologies and patents that have commercial applications in reliable energy.
  - The global lithium-ion battery market is forecast to grow over the next 10 years to US\$130 billion<sup>1</sup> with major market segments including transportation and mobility.
  - Collaborative effort combines Archer's graphite and graphene materials with the R&D capability of The University of New South Wales.
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Archer Exploration Limited (ASX:AXE, Archer) is pleased to announce the signing of a Collaboration Agreement and a complementary Research Service Agreement with The University of New South Wales (UNSW) which seek to develop and implement Archer's graphite and graphene materials for use in energy storage system applications targeting lithium-ion batteries.

The research will have the aim of producing technological advances utilising Archer's graphite and graphene materials and the R&D capability of UNSW, with the University ranking in the top 3% globally in Engineering and Technology, according to the 2018 QS World University Rankings<sup>2</sup>, and housing world-class facilities for battery materials testing and development at the Mark Wainwright Analytical Centre. The research directly aligns with Archer's vision of developing and integrating advanced materials, specifically in the focus area of reliable energy for the betterment of society.

The global lithium-ion battery market is forecast to increase to US\$130 billion by 2028<sup>1</sup> with growth concentrated in the Asia Pacific region. Lithium-ion battery devices service a number of growing market segments where high-power density and long life-times are required at ambient and near-ambient conditions:

- Transportation and mobility (electric vehicles)
- Mobile devices and computing
- Intermittent renewable energy sources

The primary focus of the collaboration is on the rational design of high-performance electrodes for lithium-ion batteries using graphite and graphene sourced from Archer's Campoona deposit. This work is expected to result in the development of electrodes for lithium-ion batteries and the implementation of these electrodes in a number of advanced application full-cell and half-cell configurations. The graphite and graphene-based materials developed would be tailored electronically, chemically and structurally for mobile and stationary device applications with specific performance requirements.

Commenting on the new agreements, Archer Exploration CEO, Dr Mohammad Choucair added, "Archer now enjoys a unique relationship with UNSW and facilities within the University including those in the Mark Wainwright Analytical Centre. This Centre, unique in its diversity in Australia, comprises AUD\$100 million of state-of-the-art characterisation equipment, managed by over 80 instrument scientists ready to engage and drive research projects within Archer. The Centre has a broad range of capabilities that fulfil our aims to participate in the integration of advanced materials in battery technologies that will provide future opportunities and new markets to underpin the development of Archer's substantial graphite resources".

For further information, please contact:

Dr Mohammad Choucair  
Chief Executive Officer  
Archer Exploration Limited  
Tel: +61 8 8272 3288

Mr Cary Helenius  
Investor Relations  
Market Eye  
Tel: +61 3 9591 8906

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<sup>1</sup>IDTechEx, October 2017, *Li-ion Batteries 2018-2028 From raw materials to new materials, through gigafactories and emerging markets*, accessed 18 April 2018, <<https://www.idtechex.com/research/reports/li-ion-batteries-2018-2028-000557.asp>>.

<sup>2</sup>QS Top Universities, *QS World University Rankings*, accessed 18 April 2018, <<https://www.topuniversities.com/universities/university-new-south-wales-unsw-sydney>>.