



## Agreement to Power Wearable Electronics with Moisture

**Perth, Australia – 13 December 2022** Strategic Elements Ltd (ASX: SOR) is pleased to report that 100% owned Australian Advanced Materials (AAM) and The University of New South Wales have signed an agreement for a \$1,600,000 Project to develop a next-generation power source that can directly **generate electricity from moisture in the air** for wearable electronics.

The 'Powering Next Generation Wearable Electronics' Project has been awarded funding under an Australian Research Council (ARC) Linkage Grant. This federal program supports long-term strategic alliances with applications rigorously assessed by a multidisciplinary panel and approved by the Minister. Expected outcomes include an electronic material for a wide range of end uses in wearable electronics, significant advances in self-powered, environmentally friendly devices, and the commercialisation of Australian-invented technology.

The Project will be led by Professor Dewei Chu and includes a team of interdisciplinary researchers in functional materials, computational materials science and solution-processed nanodevices. The team will have access to state-of-the-art facilities at UNSW, including nanoionics materials fabrication, electronic printing and characterisation technology. The funding includes \$486,640 in cash from the Australian Research Council and \$554,178 in services and equipment in kind from The University of New South Wales over three years. AAM will provide \$350,000 in kind and \$220,000 in cash and retain ownership of the underlying **Energy Ink™** IP.

The **Energy Ink™** technology is still in early development, and the fundamental upper limit of aspects such as maximum power output, duration and energy density remains unknown. Printed graphene-oxide-based cells that generate energy from airborne water molecules could potentially directly power a device, complement a battery by extending device life or provide energy for battery storage. The global imperative for more innovative, renewable energy creation and power sources is expected to grow significantly.

### **Demonstration Development**

Stealth Technologies Pty Ltd, an automation and robotics company, owned by Strategic Elements, is currently building programmable load simulators that will enable automated testing to simulate how Energy Ink™ cells perform in real-world applications. Automation will allow the Company to run multiple tests in parallel without human intervention. Programming will allow circuits to simulate devices with different power usage patterns. This will accelerate testing and optimise the size of cells or packs required to power the circuits used in various real-world products.

Importantly, the extensive data captured from the programmable load simulators will also form a data bank for future discussions with OEM development partners across various devices.

The initial demonstration will simulate how Energy Ink™ cells perform to the requirements of a commercial wearable skin patch and is on track to be completed in Q4 2022. Electronic Skin Patches are currently a large USD 10 billion market<sup>1</sup>. These products provide sports, health and other information from devices attached to the human body and currently use rigid alkaline batteries or those with lithium materials. The market for skin patches is forecast to grow to USD 27 billion by 2033<sup>1</sup>.

### **Larger Scale Energy Ink Systems**

Development success by the team has opened a potential R&D pathway for **larger-scale Energy Ink systems** either through packs with multiple connected cells or larger cell sizes. Over the 14-day testing period, a pack previously successfully generated more than 2.4 Ah (2400 mAh) of charge. Investigations into whether Energy Ink™ cells generate more electrical charge as they increase in size have also been successful, with a single 100 cm<sup>2</sup> cell generating over 1.4 Ah (1400 mAh) of electrical charge. AAM has access to equipment that can print features as large as 3m<sup>2</sup>, and the Company is designing a program of work that will significantly increase cell size under development. Further results are expected in Q1, 2023.

**Strategic Elements – Pooled Development Fund**

The Australian Federal Government has registered Strategic Elements as a Pooled Development Fund with a mandate to back Australian innovation. The Company supports leading Australian scientists and innovators in high-risk-high reward ventures. SOR majority funds the initial development of each Venture whilst seeking a major strategic investor/partner able to assist commercialisation. The Company is backing projects across robotics, artificial intelligence, printable technologies (battery, storage) and strategic technology metals. Investors in SOR potentially pay no tax on capital gains from selling their SOR shares as the Company operates under the Pooled Development Program. More information is available on the Company's website.

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This announcement was authorised for release by the Strategic Elements' Board of Directors.