



## SOR Breakthrough in Generating Electricity from Moisture

Western Australia, May 11<sup>th</sup>, 2022 - Strategic Elements Ltd (ASX: SOR) is pleased to report **nanoionic** materials engineering by 100% owned AAM and research partner The University of New South Wales has created a step-change in the ability to **convert moisture** in the air **to electrical energy**. Successful breakthroughs in its battery technology have demonstrated the potential to increase the electrical charge capacity from milliamp-hours (mAh) **to ampere-hours (Ah)**. This firmly establishes the technology as a world leader globally and significantly broadens its potential use in electronics with enhanced power requirements.

### Amp Range Development

The team has commenced development to implement and validate **multiple** technology breakthroughs into a world-first battery pack able to harvest **ampere-hour range** of electrical charge solely from moisture in the air. The 36cm<sup>2</sup> cells will be printed onto flexible plastic using green, sustainable, safe materials. Results are intended to be available in Q3, 2022.

### Energy Ink – Powered by Moisture

Applications for trademarks of **Energy Ink™** and **Powered by Moisture™** have been registered and will be adopted moving forward. Unlike lithium-based batteries, Energy Ink™ uses green, sustainable materials that are safe and non-flammable and, when printed onto flexible plastic, can be flexed and bent around the human body or **structures**. Intellectual Property from recent developments has been covered under a patent application.

### Large Existing Market for Electronic Skin Patches

Based on early results of the upgraded Energy Ink™, the Company believes the technology profile has **exceeded** the power output requirements of most existing devices in the large USD 10 billion Electronic Skin Patch market<sup>1</sup>. These products are used to provide sports and health 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 30 billion by 2031<sup>1</sup>.

Flexibility characteristics of the technology are being measured and validated for use in electronic skin patch applications. A technology demonstrator meeting both power and flexibility requirements is currently under development and intended to be completed in Q3, 2022. The Company is compiling a further presentation on this market opportunity to be made available in the next 4 weeks.

### Larger Battery Cell Size

Commercial printing equipment can produce small electrical components to multi-square meters in size, and from single-sheet production to long continuous print runs. A strong benefit of printed electronics is that components can be manufactured in a roll-to-roll process. This means that a large roll of plastic is fed into the production line instead of individual plastic sheets, like newspaper printing. Due to this, very large areas can be produced more cost-effectively. Investigation into the ability to roll printed Energy Ink™ material into a tube form has commenced.

To date, 36cm<sup>2</sup> battery cells suitable for electronic skin patches have been produced. However, UNSW equipment has the capacity to screen print features as small as 100 micrometres and as **large as 3m<sup>2</sup> (30,000 cm<sup>2</sup>)**. The Company is **initially** increasing the Energy Ink™ cell size area to **100cm<sup>2</sup>** to test the impact on power output from larger printed cells. Initial results of the cell size investigation are expected within the next 4-6 weeks.

## Company Comment

*'It wasn't long ago that many said it was impossible to produce any usable energy from moisture. Our team experienced a lot of scepticism. For us to now realistically target the ampere-hour range generation of electrical energy solely from humidity in the air is a huge achievement. Our technology doesn't rely on rare materials and carries no safety risks, and in addition, can provide flexibility to electronics'.*

*"There is an obvious near-term target market in electronic skin patches, but we are also excited about clearly being in the early stage of testing the fundamental upper limits of this technology. The current success is a testament to the strong relationship developed between the Company, Professor Dewei Chu and his team at UNSW developed over years of collaborative electronic ink development".*

## About the UNSW Collaboration

Traditional battery technologies reduce the freedom of design for new electronic devices. Screen printed graphene-oxide based cells that harvest energy from airborne water molecules could potentially directly power a device, compliment a battery to extend device life or provide energy for battery storage. Development is under an Australian Research Council part-funded collaboration between the Company and the University of New South Wales<sup>2</sup>. UNSW has deep experience in electronic inks, energy harvesting and storage over the past 10 years and is applying that to the Energy Ink™ technology. UNSW School of Materials Science and Engineering is ranked #1 in Australia for materials science and has a number of partnerships with leading companies such as Boral, Hitachi Chemical, One Steel and many more. UNSW has world-class infrastructure and equipment geared towards advanced materials engineering and fabrication.

## About the Company

The Australian Federal Government has registered Strategic Elements as a Pooled Development Fund with a mandate to back Australian innovation. The Company is listed on the ASX under the code "SOR". The Company operates as a venture builder where it generates high risk-high reward ventures by sourcing teams of leading scientists or innovators. SOR majority funds the initial development of each venture whilst seeking a strategic investor that could strongly assist commercialisation. 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.*

<sup>1</sup> <https://www.idtechex.com/en/research-report/electronic-skin-patches-2021-2031/821>

<sup>2</sup> ASX Announcement 30/07/2020