

ASX Announcement ([ASX: AXE](#))

20 April 2023

## Third Quarter Activities Report and Appendix 4C

For the three months ending 31 March 2023

### Significant Activities

- The Company is well capitalised with approximately \$24.4 million cash and no debt.
- <sup>12</sup>CQ chip development advances to wafer-scale quantum electronic device fabrication using foundry-compatible UV optical and E-beam lithography.
- Hundreds of quantum electronic devices and qubit materials prepared for testing, measurement, integration, and optimisation towards qubit control and readout.
- Engagement with tier-one semiconductor companies, including TSMC, to secure future manufacturing capabilities and support technology development.
- Biochip technology milestone achieved, overcoming a conventional limitation of gFET sensing that paves the way to the selective detection of target molecules.
- The Company is actively and regularly pursuing exposure to international global semiconductor industry participants.

Archer Materials Limited (“Archer”, the “Company”, “[ASX: AXE](#)”) is pleased to provide its Quarterly Activities Report and Appendix 4C for the three months ending 31 March 2023 (“Quarter”).

**Commenting on third quarter activities, Greg English, Executive Chairman of Archer, said,** “During the Quarter, the Archer team successfully developed a fabrication process for the manufacture of wafer-based functional devices (“chips”) for its quantum electronic devices. The Company used industry standard semiconductor nanofabrication to facilitate the fabrication of potentially hundreds of advanced quantum electronic devices on a single silicon wafer.”

“Biochip development continued during the Quarter with the Archer team deigning a strategy to rid the d graphene field effect transistors (“gFET”) sensor of signal interference caused by the screening layer and introduce practical device operation sensitivities. The Archer team applied innovation and collectively developed the software and incorporated the hardware with the biochip system platform to make an “in house” device that allows the Company to achieve electronic modulation and tuning of gFET sensitivity.”

“To develop the quantum processor Archer will need to continue to access overseas facilities, expertise and customers. During the Quarter we established a presence at EPFL, Switzerland. Archer’s establishment in Switzerland is of strategic importance to the Company’s international expansion. Switzerland represents the first logical step for international expansion given the Company’s existing relationship with EPFL and significant size of the European semiconductor, quantum computing and deep tech communities.”

## Quarterly Activities to 31 March 2023

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Archer is a technology company that operates within the semiconductor industry. The Company is developing advanced semiconductor devices, including chips relevant to quantum computing and medical diagnostics. The Company is progressing the development of its  $^{12}\text{CQ}$  quantum computing qubit processor chip (" $^{12}\text{CQ}$  chip") and 'lab-on-a-chip' biochip technology ("biochip").

### Technology development and commercialisation activities

#### $^{12}\text{CQ}$ Chip

Archer's  $^{12}\text{CQ}$  chip is a unique qubit processor technology the Company is developing that may allow for mobile quantum computing devices. During the Quarter, the Company's progress involved the following:

- Development of a multi-scale wafer fabrication process for Archer's quantum electronic devices ("QEDs").
- Commencing technical programs of low-temperature (cryogenic) characterisation of QEDs necessary for the development of qubit readout and control mechanisms in Archer's chip-based quantum logic devices.
- Advances in optimising and validating the  $^{12}\text{CQ}$  qubit material coherence times.
- Development of an encapsulation method for the  $^{12}\text{CQ}$  qubit chips. Initial outcomes of the packaging development indicate cleanroom processing is compatible with standard semiconductor foundry methods while maintaining coherence times.
- Collaboration with researchers at EPFL, and since late 2022, the Company and EPFL have been developing second-generation, unique integrated chip designs for the potential complex spin manipulation of Archer's qubit material.
- TSMC (the largest semiconductor foundry in the world) has accepted Archer as their customer after due diligence and screening. This permits Archer to access TSMC semiconductor fabrication process technologies, which include the most advanced technologies and also more mature process technologies.

#### Wafer-scale quantum electronic device fabrication

During the Quarter Archer staff developed a multi-scale wafer fabrication process for its QEDs. Wafer-based functional devices ("chips") are a fundamental requirement to the development of the  $^{12}\text{CQ}$  chip technology, as Archer's innovation aims to realise mobile-compatible quantum processing that can easily be integrated into modern electronic devices.

The Company devised and applied methods that combine both UV optical lithography and electron-beam (E-beam) lithography to facilitate the fabrication of potentially hundreds of advanced QEDs on a single silicon wafer (Image 1). This has greatly increased the yield of QEDs that are being developed and optimised to address Archer's technological goals of quantum control and readout in the  $^{12}\text{CQ}$  chip-based qubit system.



**Image 1.** A multitude of Archer quantum electronic devices defined by UV optical lithography on a commercial 2" silicon-on-insulator wafer substrate.

#### Advanced quantum measurements, equipment, facilities, and infrastructure

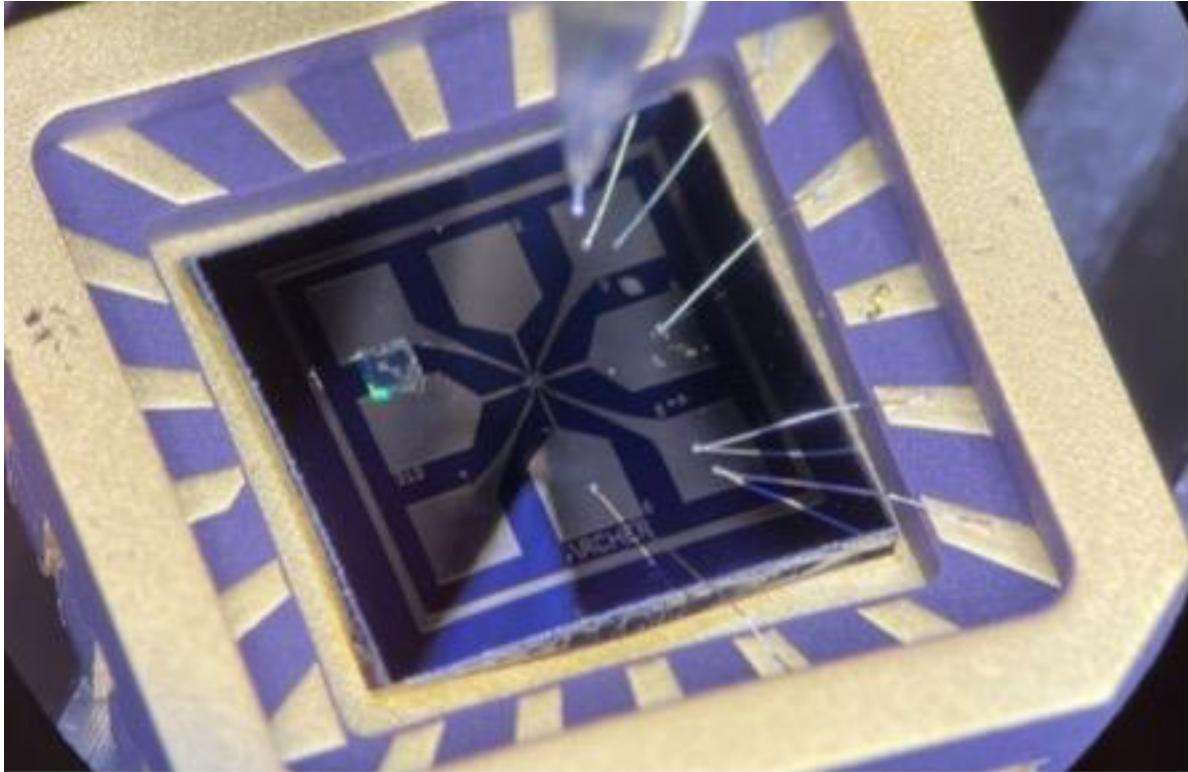
Archer continues to address the sector scarcity of available and accessible world-class facilities to perform the sophisticated quantum measurements required for  $^{12}\text{CQ}$  chip development.

Archer has now secured access to a local state-of-the-art cryogenic quantum device measurement laboratory and commenced technical programs of low-temperature (cryogenic) characterisation of QEDs. While the Company's technology remains focused on quantum devices that can operate at room-temperature, the cryogenic measurements are necessary to advance development of qubit readout and control mechanisms in Archer's chip-based quantum logic devices.

Integration of Archer's unique quantum material into chip-based functional devices is key to the Company's  $^{12}\text{CQ}$  Project. Archer has recently advanced its methods for patterning nanometre-scale qubit material into QEDs. The QEDs integrating qubit material have allowed for ongoing testing and measurements that aim to validate quantum electronic properties that could potentially be exploited towards qubit readout approaches (Image 2). The improved device designs include an increased number of electronic leads as well as gate electrodes to control the electronic states within the devices.

The Archer team has been establishing its own, customised laboratory facility, with the core of the facility now operational and located at the Sydney Hardware Lab (Image 3). The laboratory includes specialty instruments assembled by Archer for the electronic characterisation of its QEDs.

The Company has made advances in optimising and validating the  $^{12}\text{CQ}$  qubit material coherence times. Recently, the Archer team prepared, and characterised the coherence properties of over 150 separately synthesised qubit material batches. These materials will be used in the integration with hundreds of QEDs planned for on-chip measurements and testing throughout 2023. The resulting information will be used for characterising the performance of the qubit and evaluating its suitability for specific quantum technology applications.



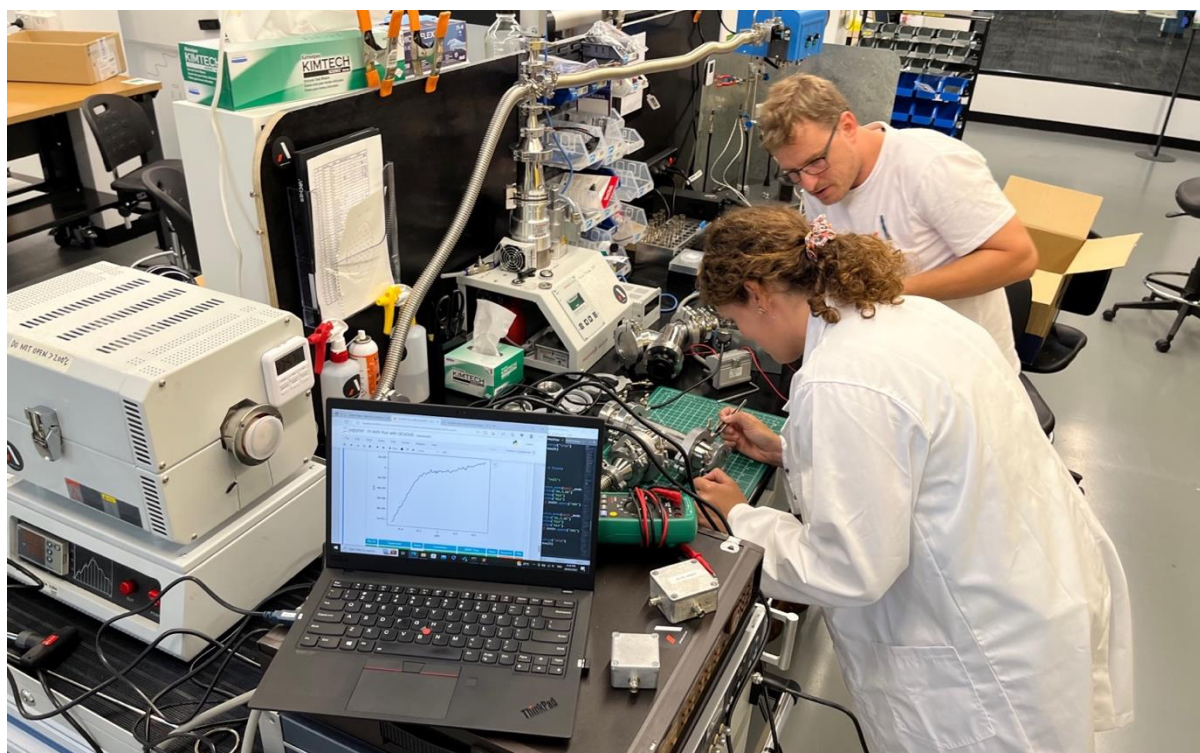
**Image 2.** An Archer 4 x 4 mm single-chip quantum electronic device after installing and bonding into a commercial chip carrier. This completed device is compatible with measurement setups for electronic characterisation at cryogenic temperatures as well as ambient conditions at room temperature using Archer's in-house lab capabilities as well as external facilities.

#### Semiconductor fabrication and chip architecture engineering

There is an operational and process requirement for a vacuum or inert atmosphere environment when operating the  $^{12}\text{CQ}$  qubit material to preserve coherence times. The development by Archer of the use of an inert atmosphere was a significant advance over the use of vacuums. Further still, the packaging of future  $^{12}\text{CQ}$  devices in a semiconductor foundry requires significant innovation in materials and process engineering to maintain qubit properties.

During the Quarter, Archer has been working towards a potential breakthrough in the foundry packaging of the  $^{12}\text{CQ}$  chip architecture. This involves the development of an encapsulation method for the  $^{12}\text{CQ}$  chips, that could potentially provide an 'artificial vacuum' to allow devices to be operated in ambient conditions. Initial outcomes of the packaging development indicate cleanroom processing is compatible with standard semiconductor foundry methods while maintaining coherence times. This means the approach has the potential for technology translation to industrially scale Archer's  $^{12}\text{CQ}$  qubit chip architecture.





**Image 3.** Archer staff working in the Company's newly established in-house R&D laboratory.

#### Collaboration with EPFL

Archer continues to collaborate with researchers at EPFL. The Company and EPFL have been developing second-generation, unique integrated chip designs for the potential complex spin manipulation of Archer's qubit material. The new chip designs significantly advance on the HEMT and CMOS chip designs and functionality reported in 2022. The new chips are being manufactured in a semiconductor foundry in Europe, with ongoing testing, optimisation, and potential operation anticipated throughout 2023.

In November 2022, the Company reported that powerful supercomputer simulations provided the most accurate understanding of Archer's unique  $^{12}\text{CQ}$  qubit material to date, confirming a metallic-like nanocarbon. Since then, the detailed scientific results of the work have undergone the peer-review process and during the Quarter were accepted for publication. The in-press, journal pre-proof is available free online<sup>1</sup>.

#### Engagement with global semiconductor supply chain participants

TSMC has accepted Archer as their customer after due diligence and screening. This permits Archer to access TSMC semiconductor fabrication process technologies, which include the most advanced technologies and also more mature process technologies (e.g. 180 nm and 130 nm processes). This will allow Archer to perform cost-effective multi-project wafer runs, and potential tape out and industrial production of future devices. Contractual relationships with TSMC will be on a case by case basis. TSMC is the largest semiconductor foundry in the world.

<sup>1</sup> <https://www.sciencedirect.com/science/article/pii/S0008622323002166>

### **Archer's Biochip**

Archer's biochip innovation aims to integrate graphene field effect transistors ("gFETs") into advanced fluidic systems to create miniaturised lab-on-a-chip device platforms for medical diagnostics. Integration of gFETs with on-chip fluidics could potentially enable multiplexing, i.e., the ability to parallelise the detection of multiple biologically relevant targets, on a chip.

During the Quarter, the Company progressed the development of its biochip technology by electronically controlling the sensitivity of incorporated gFET devices. This involved the Archer team undertaking development capable of overcoming conventional limitations of gFET sensing.

The Company addressed the fundamental challenge of disrupting electronic charge screening that attenuates biosensing signals in gFETs. The development paves the way for the specific binding of biomolecules to contribute to usable gFET sensor responses, and is a significant technological milestone towards Archer's biochip function and operation.

The electronic charge screening layer is less than 1 nanometer (nm) in biologically relevant liquids, and generally, electronic sensing beyond this distance is impossible. For sensing to work in Archer's biochip, the analyte charge must not be screened, as most biological analytes are around 2-30 nm in size, i.e., most of their charge is out of gFET sensitivity range in liquids.

Overcoming this technological challenge is a significant step in progressing towards a functional and operational biosensing device as part of Archer's biochip technology, as it is critical for the selective detection of target molecules<sup>2</sup>.

Archer employed a sensor design strategy which involves the use of a range of dynamic electric fields to rid the gFET sensor of signal interference caused by the screening layer and introduce practical device operation sensitivities. Archer developed the software and incorporated the hardware with the biochip system platform that allows the Company to achieve electronic modulation and tuning of gFET sensitivity.

Measurements were performed by Archer staff in the low frequency range (1–10 Hz), which are relevant to penetrating biological fluids. Results showed a 3x increase in the sensitivity of the gFET to target analytes when compared to the static case with no oscillating voltage. In the context of overcoming charge screening in gFET devices, the 3x increase in sensitivity is significant.

Archer owns 100% of the biochip technology intellectual property. During the Quarter, the Company proceeded to a full patent application related to on-chip graphene transfer and chemical processing, under the Patent Cooperation Treaty (Exhibit 1).

### **Commencement of overseas expansion**

During the Quarter, the Company joined the Academia-Industry Collaboration Program ("AIC Program"), which allowed Archer to have dedicated workspaces at the Switzerland Innovation Park West École Polytechnique Fédérale de Lausanne ("SIP West EPFL"). Archer's establishment in Switzerland is of strategic importance to the Company's international expansion.

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<sup>2</sup> <https://pubs.acs.org/doi/10.1021/acsnano.0c08622>



Archer's <sup>12</sup>CQ chip technology development is currently underpinned by 10 patents in Europe (see Exhibit 1), including in Switzerland, with the technology co-invented at EPFL. Archer has existing, long-term collaborations with EPFL.

The AIC Program will allow the establishment of a Company business unit on site or nearby, the opportunity to explore business development and partnerships with start-ups and multinational companies, the acquisition of talent in the deep tech and semiconductor industry in Europe, and strengthening links with collaboration partners, including EPFL.

Archer has determined that Switzerland represents the first logical step for international expansion given the Company's existing relationship with EPFL and significant size of the European semiconductor, quantum computing and deep tech communities.

SIP West EPFL is a network of six innovation parks in five Swiss Cantons (Fribourg, Geneva, Neuchâtel, Valais, Vaud), all specialised in different competence areas and with a specific corporate and start-up ecosystem. The aim of these parks is to host on their premises R&D groups, commercial and innovation business units of companies, and major international groups.

The AIC Program spaces are located at the six innovation parks of the SIP West EPFL network: Archer will enter the AIC Program linked to the EPFL Innovation Park (Image 4), and will be able to utilise the other innovation parks during the program. The duration of the AIC Program is six months and may be extended.




**Image 4.** Entryway to the EPFL Innovation Park in Lausanne, Switzerland, that is part of the SIP West EPFL network, where Archer is based as part of the AIC Program.

## Exhibit 1. Description of Archer's technology patents and patent applications

| Filing Date               | Technology Summary   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
|---------------------------|--|------------------|---------------------------|---------------------------|--|-----------|-------------------|--------------------------|------------|-------|---------|--------------------------|----------|--------|---------|-----------|------------|-----------|---------|
| 3 Dec 2015                | <p> <b>A quantum electronic device.</b> Quantum electronic devices for processing qubits represented by an electron spin on a new type of carbon nanomaterial and methods for using this material in quantum computing.</p> <table> <tr> <th>Stage &amp; Coverage</th><th>Patent/Application Number</th></tr> <tr> <td><b>Granted</b></td><td></td></tr> <tr> <td>Japan</td><td>6809670</td></tr> <tr> <td>South Korea</td><td>10-2288974</td></tr> <tr> <td>China</td><td>4606612</td></tr> <tr> <td>United States of America</td><td>11126925</td></tr> <tr> <td>Europe</td><td>3383792</td></tr> <tr> <td>Australia</td><td>2016363118</td></tr> <tr> <td>Hong Kong</td><td>1256636</td></tr> </table> | Stage & Coverage | Patent/Application Number | <b>Granted</b>            |  | Japan     | 6809670           | South Korea              | 10-2288974 | China | 4606612 | United States of America | 11126925 | Europe | 3383792 | Australia | 2016363118 | Hong Kong | 1256636 |
| Stage & Coverage          | Patent/Application Number  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| <b>Granted</b>            |  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Japan                     | 6809670  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| South Korea               | 10-2288974   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| China                     | 4606612  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| United States of America  | 11126925   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Europe                    | 3383792  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Australia                 | 2016363118   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Hong Kong                 | 1256636  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| 15 Feb 2019               | <p> <b>Graphene complexes and compositions thereof.</b> Complexes comprising graphene compositions, methods of synthesising these complexes and compositions, and the use of these complexes and compositions in biomolecular sensing.</p> <table> <tr> <th>Stage &amp; Coverage</th><th>Patent/Application Number</th></tr> <tr> <td><b>Pending</b></td><td></td></tr> <tr> <td>Australia</td><td>PCT/AU2020/050128</td></tr> <tr> <td>United States of America</td><td>17429442</td></tr> </table>  | Stage & Coverage | Patent/Application Number | <b>Pending</b>            |  | Australia | PCT/AU2020/050128 | United States of America | 17429442   |       |         |                          |          |        |         |           |            |           |         |
| Stage & Coverage          | Patent/Application Number  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| <b>Pending</b>            |  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Australia                 | PCT/AU2020/050128  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| United States of America  | 17429442   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| 1 Dec 2021                | <p> <b>Detection and quantification of nucleic acids.</b></p> <table> <tr> <th>Stage &amp; Coverage</th><th>Patent/Application Number</th></tr> <tr> <td><b>Pending</b></td><td></td></tr> <tr> <td>Australia</td><td>PCT/AU2022/051434</td></tr> </table>  | Stage & Coverage | Patent/Application Number | <b>Pending</b>            |  | Australia | PCT/AU2022/051434 |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Stage & Coverage          | Patent/Application Number  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| <b>Pending</b>            |  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Australia                 | PCT/AU2022/051434  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| 31 Mar 2022               | <p> <b>Fabrication and processing of graphene electronic devices on silicon with a SiO<sub>2</sub> passivation layer.</b></p> <table> <tr> <th>Stage &amp; Coverage</th><th>Patent/Application Number</th></tr> <tr> <td><b>Pending</b></td><td></td></tr> <tr> <td>Australia</td><td>PCT/AU2023/050251</td></tr> </table>  | Stage & Coverage | Patent/Application Number | <b>Pending</b>            |  | Australia | PCT/AU2023/050251 |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Stage & Coverage          | Patent/Application Number  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| <b>Pending</b>            |  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Australia                 | PCT/AU2023/050251  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| 17 Oct 2022               | <p> <b>Nanofabrication of electronic device components.</b></p> <table> <tr> <th>Stage &amp; Coverage</th><th>Patent/Application Number</th></tr> <tr> <td><b>Provisional Patent</b></td><td></td></tr> <tr> <td>Australia</td><td>2022903045</td></tr> </table>  | Stage & Coverage | Patent/Application Number | <b>Provisional Patent</b> |  | Australia | 2022903045        |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Stage & Coverage          | Patent/Application Number  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| <b>Provisional Patent</b> |  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Australia                 | 2022903045   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| 11 Nov 2022               | <p> <b>A device, system, and method for sensing an electronic property of fluid sample.</b></p> <table> <tr> <th>Stage &amp; Coverage</th><th>Patent/Application Number</th></tr> <tr> <td><b>Provisional Patent</b></td><td></td></tr> <tr> <td>Australia</td><td>2022903393</td></tr> </table>  | Stage & Coverage | Patent/Application Number | <b>Provisional Patent</b> |  | Australia | 2022903393        |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Stage & Coverage          | Patent/Application Number  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| <b>Provisional Patent</b> |  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Australia                 | 2022903393   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| 23 Dec 2022               | <p> <b>Methods for fabrication of graphene field-effect transistors with a liquid top-gate and associated componentry.</b></p> <table> <tr> <th>Stage &amp; Coverage</th><th>Patent/Application Number</th></tr> <tr> <td><b>Provisional Patent</b></td><td></td></tr> <tr> <td>Australia</td><td>2022904006</td></tr> </table>   | Stage & Coverage | Patent/Application Number | <b>Provisional Patent</b> |  | Australia | 2022904006        |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Stage & Coverage          | Patent/Application Number  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| <b>Provisional Patent</b> |  |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |
| Australia                 | 2022904006   |                  |                           |                           |  |           |                   |                          |            |       |         |                          |          |        |         |           |            |           |         |

Patent Family

 <sup>12</sup>CQ chip  Biochip



## Financial update

The Company's cash balance at the end of the Quarter was \$24,461,946.

The Company holds 1,633,944 shares in Canadian Stock Exchange listed Volatus Capital Corp (CSE:VC) and 11,571,119 shares and 2,892,780 quoted options in ASX listed ChemX Materials Ltd (ASX:CMX).

Archer's accompanying Appendix 4C cashflow report for the Quarter includes an amount of \$131,000 at item 6.1, relating to executive and non-executive director fees paid as salaries and wages.

## Corporate

### R&D Tax Incentive

During the Quarter, the Company received a A\$1,021,471 cash rebate from the Australian Federal Government's Research and Development Tax Incentive ("RDTI") program.

The cash rebate was provided in respect of eligible Research and Development ("R&D") activities conducted during the year ended 30 June 2022, related to the Company's <sup>12</sup>CQ chip for quantum electronic devices and 'lab-on-a-chip' biochip technology.

### Issued Capital

| Date                                 | Shares      | Options                  |
|--------------------------------------|-------------|--------------------------|
| Start of Quarter                     | 248,967,207 | 34,800,000               |
| New issues during Quarter            | Nil         | Nil                      |
| Options exercised during Quarter     | 6,379,806   | 8,800,000 <sup>(1)</sup> |
| Options forfeited during the quarter | N/A         | 1,050,000 <sup>(2)</sup> |
| End of Quarter                       | 248,967,207 | 24,950,000               |
| Date of this Report                  | 248,967,207 | 24,950,000               |

(1) The exercise of 8,800,000 unlisted options, exercisable at \$0.1511 by 31 March 2023, using the Company's cashless exercise mechanism.

(2) 1,050,000 unlisted options with an exercise price of \$1.79 and expiring 31 May 2025 lapsed in accordance with the terms of which they were issued.

## Stakeholder events and outreach

The Company electronically distributed a number of Newsletters, Insights, and Explainers to shareholders during the Quarter, including:

- Explainer Article: [The single atom transistor](#)
- March Newsletter: [Multi-scale wafer fab of quantum devices](#)
- Insights Article: [KPMG global semiconductor industry outlook for 2023](#)
- February Newsletter: [Archer well-capitalised, development advancing](#)
- Insights Article: [Building a quantum economy](#)
- January Newsletter: [Global semiconductor industry outlook, current state of quantum](#)

## About Archer

Archer is a technology company that operates within the semiconductor industry. The Company is developing advanced semiconductor devices, including chips relevant to quantum computing and medical diagnostics.

The Board of Archer authorised this announcement to be given to ASX.

### General Enquiries

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### Media Enquiries

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For more information about Archer's activities, please visit our:

Website:

<https://archerx.com.au/>

Twitter:

<https://twitter.com/archerxau>

YouTube:

<https://bit.ly/2UKBBmG>

Sign up to our Newsletter:

<http://eepurl.com/dKosXI>

## Appendix 4C

### Quarterly cash flow report for entities subject to Listing Rule 4.7B

**Name of entity**

Archer Materials Limited

**ABN**

64 123 993 233

**Quarter ended ("current quarter")**

31 March 2023

| <b>Consolidated statement of cash flows</b>                        | <b>Current quarter<br/>\$A'000</b> | <b>Year to date<br/>(9 months)<br/>\$A'000</b> |
|--|------------------------------------|--|
| <b>1. Cash flows from operating activities</b>                     |                                    |  |
| 1.1 Receipts from customers  | -                                  | -  |
| 1.2 Payments for   |                                    |  |
| (a) research and development (exclusive of wages allocated to R&D) | (129)                              | (306)  |
| (b) product manufacturing and operating costs                      | -                                  | -  |
| (c) advertising and marketing                                      | -                                  | -  |
| (d) leased assets  | (4)                                | (5)  |
| (e) staff costs  | (646)                              | (2,162)  |
| (f) administration and corporate costs                             | (127)                              | (708)  |
| 1.3 Dividends received (see note 3)                                | -                                  | -  |
| 1.4 Interest received  | 30                                 | 184  |
| 1.5 Interest and other costs of finance paid                       | -                                  | -  |
| 1.6 Income taxes paid  | -                                  | -  |
| 1.7 Government grants and tax incentives                           | 1,021                              | 1,046  |
| 1.8 Other (provide details if material)                            |                                    |  |
| <b>1.9 Net cash from / (used in) operating activities</b>          | <b>145</b>                         | <b>(1,951)</b>                                 |

|  |      |      |
|--|------|------|
| <b>2. Cash flows from investing activities</b> |      |      |
| 2.1 Payments to acquire or for:                |      |      |
| (a) entities                                   | -    | -    |
| (b) businesses                                 | -    | -    |
| (c) property, plant and equipment              | (8)  | (61) |
| (d) investments                                |      |      |
| (e) intellectual property                      | (17) | (66) |



| Consolidated statement of cash flows |   | Current quarter<br>\$A'000 | Year to date<br>(9 months)<br>\$A'000 |
|--------------------------------------|---|----------------------------|---------------------------------------|
|                                      | (f) other non-current assets                          | -                          | -                                     |
| 2.2                                  | Proceeds from disposal of:                            |                            |                                       |
|                                      | (a) entities  | -                          | -                                     |
|                                      | (b) businesses  | -                          | -                                     |
|                                      | (c) property, plant and equipment                     | -                          | -                                     |
|                                      | (d) investments                                       | -                          | -                                     |
|                                      | (e) intellectual property                             | -                          | -                                     |
|                                      | (f) other non-current assets                          | -                          | -                                     |
| 2.3                                  | Cash flows from loans to other entities               | -                          | -                                     |
| 2.4                                  | Dividends received (see note 3)                       | -                          | -                                     |
| 2.5                                  | Other (provide details if material)                   | -                          | -                                     |
| 2.6                                  | <b>Net cash from / (used in) investing activities</b> | <b>(25)</b>                | <b>(127)</b>                          |

|           |   |          |           |
|-----------|---|----------|-----------|
| <b>3.</b> | <b>Cash flows from financing activities</b>   |          |           |
| 3.1       | Proceeds from issues of equity securities (excluding convertible debt securities)       | -        | -         |
| 3.2       | Proceeds from issue of convertible debt securities                                      | -        | -         |
| 3.3       | Proceeds from exercise of options   | -        | 76        |
| 3.4       | Transaction costs related to issues of equity securities or convertible debt securities | -        | -         |
| 3.5       | Proceeds from borrowings  | -        | -         |
| 3.6       | Repayment of borrowings   | -        | -         |
| 3.7       | Transaction costs related to loans and borrowings                                       | -        | -         |
| 3.8       | Dividends paid  | -        | -         |
| 3.9       | Other (provide details if material)   | -        | -         |
| 3.10      | <b>Net cash from / (used in) financing activities</b>                                   | <b>-</b> | <b>76</b> |

|           |  |        |         |
|-----------|--|--------|---------|
| <b>4.</b> | <b>Net increase / (decrease) in cash and cash equivalents for the period</b> |        |         |
| 4.1       | Cash and cash equivalents at beginning of period                             | 24,342 | 26,464  |
| 4.2       | Net cash from / (used in) operating activities (item 1.9 above)              | 145    | (1,951) |
| 4.3       | Net cash from / (used in) investing activities (item 2.6 above)              | (25)   | (127)   |

| Consolidated statement of cash flows |   | Current quarter<br>\$A'000 | Year to date<br>(9 months)<br>\$A'000 |
|--------------------------------------|---|----------------------------|---------------------------------------|
| 4.4                                  | Net cash from / (used in) financing activities<br>(item 3.10 above) | -                          | 76                                    |
| 4.5                                  | Effect of movement in exchange rates on<br>cash held                | -                          | -                                     |
| 4.6                                  | <b>Cash and cash equivalents at end of<br/>period</b>               | <b>24,462</b>              | <b>24,462</b>                         |

| 5.  | Reconciliation of cash and cash<br>equivalents<br>at the end of the quarter (as shown in the<br>consolidated statement of cash flows) to the<br>related items in the accounts | Current quarter<br>\$A'000 | Previous quarter<br>\$A'000 |
|-----|---|----------------------------|-----------------------------|
| 5.1 | Bank balances   | 3,417                      | 1,297                       |
| 5.2 | Call deposits   | 21,045                     | 23,045                      |
| 5.3 | Bank overdrafts   | -                          | -                           |
| 5.4 | Other (provide details)   | -                          | -                           |
| 5.5 | <b>Cash and cash equivalents at end of<br/>quarter (should equal item 4.6 above)</b>  | <b>24,462</b>              | <b>24,342</b>               |

| 6.  | Payments to related parties of the entity and their<br>associates   | Current quarter<br>\$A'000 |
|---|---|----------------------------|
| 6.1   | Aggregate amount of payments to related parties and their<br>associates included in item 1<br>* The above payments relate to fees and salaries paid to Directors<br>during the quarter. | 131                        |
| 6.2   | Aggregate amount of payments to related parties and their<br>associates included in item 2  | -                          |
| <i>Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an<br/>explanation for, such payments.</i> |   |                            |

|   |   |  |
|---|---|--|
| <b>7. Financing facilities</b><br><i>Note: the term "facility" includes all forms of financing arrangements available to the entity.</i><br><i>Add notes as necessary for an understanding of the sources of finance available to the entity.</i>   | <b>Total facility<br/>amount at quarter<br/>end<br/>\$A'000</b> | <b>Amount drawn at<br/>quarter end<br/>\$A'000</b> |
| 7.1 Loan facilities   | -   | -  |
| 7.2 Credit standby arrangements   | -   | -  |
| 7.3 Other (please specify)  | -   | -  |
| 7.4 <b>Total financing facilities</b>   | -   | -  |
| 7.5 <b>Unused financing facilities available at quarter end</b>   | n/a   |  |
| 7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well. |   |  |
| n/a   |   |  |

|  |                |
|--|----------------|
| <b>8. Estimated cash available for future operating activities</b>   | <b>\$A'000</b> |
| 8.1 Net cash from / (used in) operating activities (item 1.9)  | 145            |
| 8.2 Cash and cash equivalents at quarter end (item 4.6)  | 24,462         |
| 8.3 Unused finance facilities available at quarter end (item 7.5)  | -              |
| 8.4 Total available funding (item 8.2 + item 8.3)  | 24,462         |
| 8.5 <b>Estimated quarters of funding available (item 8.4 divided by item 8.1)</b>  | N/A            |
| <i>Note: if the entity has reported positive net operating cash flows in item 1.9, answer item 8.5 as "N/A". Otherwise, a figure for the estimated quarters of funding available must be included in item 8.5.</i>     |                |
| 8.6 If item 8.5 is less than 2 quarters, please provide answers to the following questions:  |                |
| 8.6.1 Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?  |                |
| Answer: n/a  |                |
| 8.6.2 Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful? |                |
| Answer: n/a  |                |
| 8.6.3 Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?  |                |
| Answer: n/a  |                |
| <i>Note: where item 8.5 is less than 2 quarters, all of questions 8.6.1, 8.6.2 and 8.6.3 above must be answered.</i>   |                |



## Compliance statement

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

Date: ..... 20 April 2023.....

Authorised by: ..... By the Board.....  
(Name of body or officer authorising release – see note 4)

## Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.
2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standard applies to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.
4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [name of board committee – eg Audit and Risk Committee]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".
5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.