

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

4 October 2024

Q1 FY25 Activities Report and Appendix 4C

For the quarter ended 30 September 2024.

Overview

- Improved the readout and manufacturability of the ^{12}CQ quantum project by creating two proof-of-concept superconducting circuit devices.
- Developed new ^{12}CQ carbon films with electron spin lifetimes exceeding those previously measured on carbon nano-onions.
- The carbon films are produced with a proprietary chemical vapour deposition process. The process should be scalable to full wafers.
- Started experiments to develop gFET biosensors for testing for chronic kidney disease by highly accurate detection of ions, like potassium.
- Sent a new Biochip gFET design for a MPW run to a foundry partner for integration of CMOS readout to bolster its functionality.
- Strong cash position to fund activities with \$16 million and no debt.
- Development of a refreshed corporate strategy now underway to more clearly map out the commercialisation roadmap of Archer's technologies.

Archer Materials Limited ("Archer", the "Company", "ASX: AXE"), a semiconductor company advancing the quantum computing and medical diagnostics industries, provides its Quarterly Activities Report and Appendix 4C for the quarter ended 30 September 2024 ("Quarter").

Commenting on Q1 FY25 activities, Greg English, Executive Chairman of Archer, said

"Both the quantum and Biochip teams reached technological milestones during the Quarter, continuing to bring our technologies closer to commercialisation.

"The ^{12}CQ project for the development of quantum computing is also moving along with improving readout and manufacturability. The two proof-of-concept electrical devices bring us closer to readout and bolster the manufacturability of the qubit material.

"We developed a highly manufacturable carbon film with attractive quantum properties, including long room-temperature electron spin lifetimes. This new carbon film helps accelerate the manufacturability of the qubit material.

"The Biochip had its first test case, chronic kidney disease, to ultimately help people test at home for this serious condition. The Biochip gFET was further de-risked by sending another design to our foundry partner VTT for a multi-project wafer run, which will allow it to be fabricated on shared wafers and reduce turn-around times."

Technology development and commercialisation activities

¹²CQ Project

The quantum team at Archer made significant progress on the ¹²CQ project during the Quarter.

Archer improved the readout (or the output of quantum information) capability for the ¹²CQ quantum device and enhanced its manufacturability by developing two proof-of-concept superconducting circuit devices. The two complementary superconducting spin readout circuits had up to eight resonators, which can simultaneously readout separate spin material.

This work helps lay the foundation for the future measurement of very small quantities of the ¹²CQ's quantum spin material. The two proof-of-concept devices were tested and created in conjunction with the University of New South Wales and US-based software company, Sonnet Precision Electromagnetics.

The Archer team developed new carbon films with electron spin lifetimes exceeding those previously measured on carbon nano-onions ("CNOs"). The films are produced with a proprietary chemical vapour deposition process. The development was made by the quantum team in its ongoing work on creating a scale-up path for CNOs and developing manufacturable methods for producing CNOs.

Biochip

The Biochip team started experiments for its first test case disease on the Biochip graphene field effect transistor ("gFET"), chronic kidney disease. Along with one of the Company's foundry partners, Archer has verified a process that directly grows graphene surfaces to produce superior devices, rather than transferring the graphene to a device from a wafer, as previously done.

The team tested the devices by storing them in normal air conditions over a two-month period, finding no significant degradation in performance. Archer is preparing the graphene surfaces (without degradation) with molecules it aims to sense. Initial experiments show that the team can decorate the devices with species that will selectively bind with atoms, or ions like potassium, an important chemical in monitoring chronic kidney disease patients.

Archer is building on this initial work to produce first demonstrator data on the detection of relevant ions in liquid – the initial step to initiate development of at-home sensing and monitoring of elements like potassium for renal patients.

Archer further derisked its Biochip gFET by sending a new design for the manufacture of 200mm diameter wafer via a multi-project wafer ("MPW") run. The Company is doing the MPW run through foundry partner VTT Technical Research Centre of Finland Ltd ("VTT") for integration of complementary metal-oxide semiconductor ("CMOS") readout. The silicon CMOS chip will measure how effectively Archer's gFET biosensors can be electrically controlled, assessed, and read out by conventional circuitry. The integration will bolster the functionality of the gFET by making readings more accurate and faster, handling and processing data to get more reliable results, minimising errors, and combining it with electronic devices for practical real-world use.

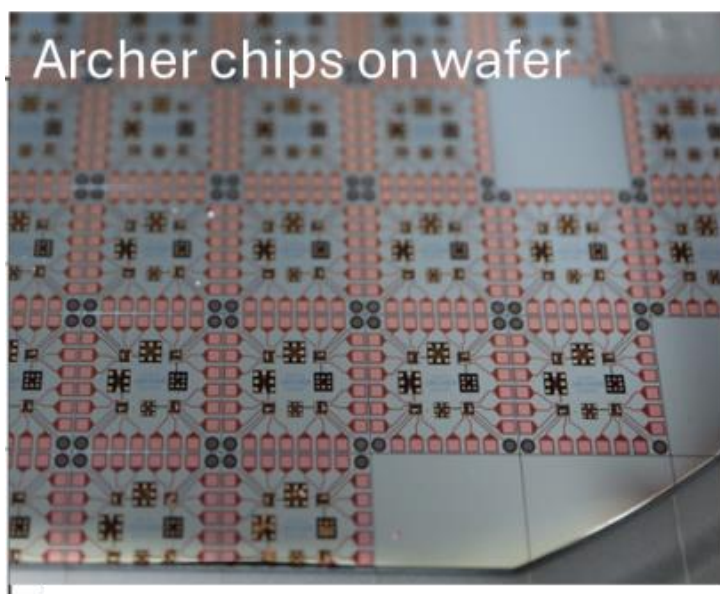


Image 1. A photo of the gFET chips on a wafer.

Search for new CEO underway & refreshed corporate strategy

While Archer has been delivering on its technology milestones, the Company has simultaneously been developing its refreshed strategy, which will be presented to shareholders before the November Annual General Meeting. The refreshed strategy will more clearly outline the commercialisation roadmap of Archer's technologies, which will include some nearer-term revenue opportunities.

In July, Archer announced the departure of Dr Choucair as CEO. With the strategy refinement largely complete, and the recent technology milestones having had no direct daily management from the outgoing CEO, the time was right for Dr Mohammad Choucair to fully relinquish his position at Archer. As part of the transition and handover, Dr Choucair has signed a Deed of Assignment confirming that all intellectual property developed by Dr Choucair whilst at Archer, remains the property of Archer, including the biosensor patent application.

Recent share trading

During September, there was an increase in share trading in Archer shares, driven by a couple of larger shareholders electing to continuously sell their shares, which has negatively impacted the Archer share price. The shareholders have now sold almost all of their shares in Archer and we do not expect the same volume of selling in the coming months, following the release of our refreshed corporate strategy, which the Board is confident will be welcomed by shareholders. The Board confirms that no directors have sold any shares during the Quarter.

Financial and corporate update

The Company's cash balance at the end of the Quarter was \$16,064,000 with no debt.

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 \$223,000 at item 6.1, relating to executive and non-executive director fees paid as salaries and wages.

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

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About Archer

Archer is a technology company that operates within the semiconductor industry. The Company is developing advanced semiconductor devices, including technologies relevant to quantum computing and medical diagnostics. Archer utilises its global partnerships to develop these technologies for potential deployment and use across multiple industries.
www.archerx.com.au

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")

30 September 2024

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (3 months) \$A'000
1. Cash flows from operating activities		
1.1 Receipts from customers	-	-
1.2 Payments for		
(a) research and development (excludes wages allocated to R&D)	(651)	(651)
(b) product manufacturing and operating costs	-	-
(c) advertising and marketing	-	-
(d) leased assets	(43)	(43)
(e) staff costs	(1,234)	(1,234)
(f) administration and corporate costs	(250)	(250)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	97	97
1.5 Interest and other costs of finance paid	-	-
1.6 Income taxes paid	-	-
1.7 Government grants and tax incentives	-	-
1.8 Other (provide details if material)		
1.9 Net cash from / (used in) operating activities	(2,081)	(2,081)

2. Cash flows from investing activities		
2.1 Payments to acquire or for:		
(a) entities	-	-
(b) businesses	-	-
(c) property, plant and equipment	(3)	(3)
(d) investments		
(e) intellectual property	(71)	(71)

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
	(f) other non-current assets	-	-
2.2	Proceeds from disposal of:		
	(a) entities	-	-
	(b) businesses	-	-
	(c) property, plant and equipment	9	9
	(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	Net cash from / (used in) investing activities	(65)	(65)

3.	Cash flows from financing activities		
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	-	-
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	Net cash from / (used in) financing activities	-	-

4.	Net increase / (decrease) in cash and cash equivalents for the period		
4.1	Cash and cash equivalents at beginning of period	18,210	18,210
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(2,081)	(2,081)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(65)	(65)

Consolidated statement of cash flows		Current quarter \$A'000	Year to date (3 months) \$A'000
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	Cash and cash equivalents at end of period	16,064	16,064

5.	Reconciliation of cash and cash equivalents at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	Current quarter \$A'000	Previous quarter \$A'000
5.1	Bank balances	3,981	3,981
5.2	Call deposits	12,083	12,083
5.3	Bank overdrafts	-	-
5.4	Other (provide details)	-	-
5.5	Cash and cash equivalents at end of quarter (should equal item 4.6 above)	16,064	16,064

6.	Payments to related parties of the entity and their associates	Current quarter \$A'000
6.1	Aggregate amount of payments to related parties and their associates included in item 1 * The above payments relate to fees and salaries paid to Directors during the quarter.	223
6.2	Aggregate amount of payments to related parties and their 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 explanation for, such payments.</i>		

7. Financing facilities <i>Note: the term "facility" includes all forms of financing arrangements available to the entity. Add notes as necessary for an understanding of the sources of finance available to the entity.</i>	Total facility amount at quarter end \$A'000	Amount drawn at quarter end \$A'000
7.1 Loan facilities	-	-
7.2 Credit standby arrangements	-	-
7.3 Other (please specify)	-	-
7.4 Total financing facilities	-	-
7.5 Unused financing facilities available at quarter end	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	

8. Estimated cash available for future operating activities	\$A'000
8.1 Net cash from / (used in) operating activities (item 1.9)	(2,081)
8.2 Cash and cash equivalents at quarter end (item 4.6)	16,064
8.3 Unused finance facilities available at quarter end (item 7.5)	-
8.4 Total available funding (item 8.2 + item 8.3)	16,064
8.5 Estimated quarters of funding available (item 8.4 divided by item 8.1)	7.7
<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: 4 October 2024.....

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.