12CQ TECHNOLOGY

BIOCHIP TECHNOLOGY

ARCHER

Archer Materials

AGM Presentation | November 2024

Corporate Overview

Directors

Greg English
(Executive Chair)
LLB, BE (Mining)

Ken Williams
(Non- Executive Director)
B.Econ (HONS), MAppFin, FAICD

Bernadette Harkin
(Non- Executive Director)
MBA, GAICD

Management

Damien Connor
(Chief Financial Officer / Company Secretary)
CA GAICD AGIA B.Com

Dr Simon Ruffell
(Chief Technology Officer)
PhD, MEng

ASX Code: **AXE**

CORPORATE SNAPSHOT

Shares on Issue
255m

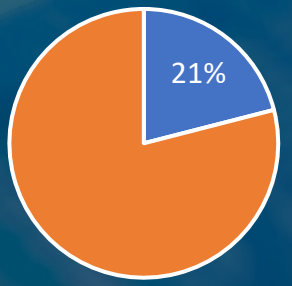
Share Price
$0.39
12 November 2024

Market Capitalisation
$99m

Cash
$16m
30 September 2024

Debt
Nil

Shareholders



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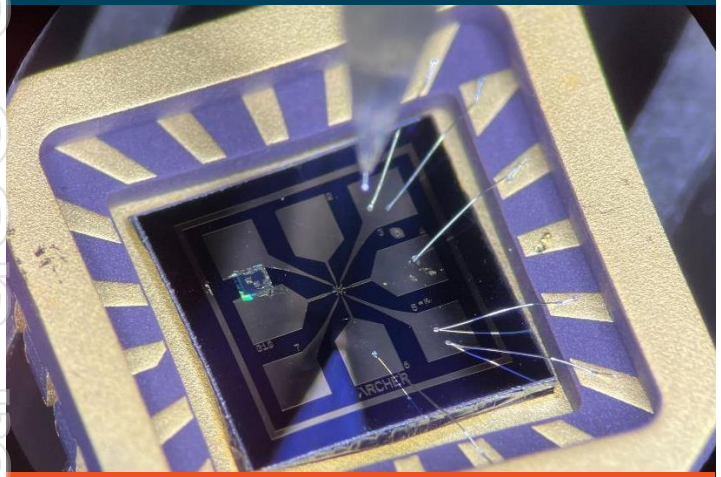
Archer Materials is building on its foundation of carbon-based technologies to develop products that will help solve critical problems.

Quantum Technology

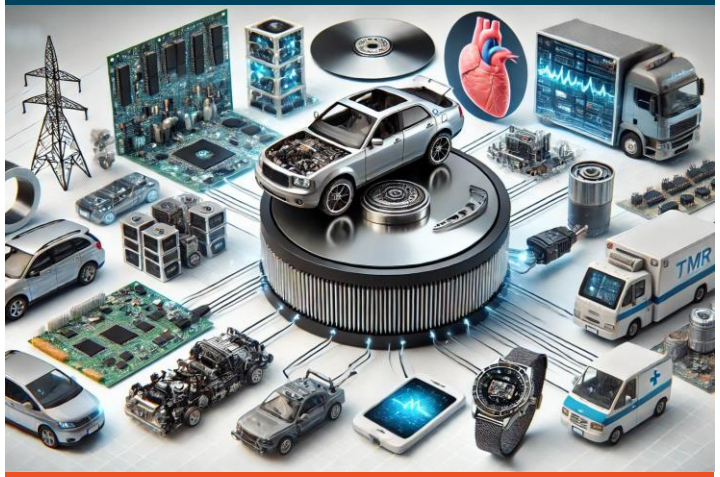


A carbon-based quantum device for applications like sensing and computing and the possibility of integrating with other electronics.

Biochip

Highly sensitive, chip-based graphene sensors for at-home management and treatment of chronic diseases.

TMR Sensor



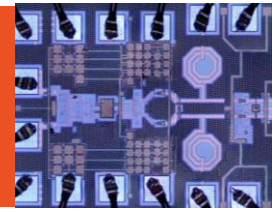
TMR sensors are more sensitive, have higher bandwidth and lower power consumption.

Technology development strategy focussed on megatrends.

Quantum Technologies

- Quantum computing offers unprecedented processing power for solving complex problems
- Advanced quantum sensors allow for highly precise measurements
- Quantum computing accelerates AI algorithms, enhancing machine learning, pattern recognition, and data processing

ARCHER TECHNOLOGIES
^{12}CQ Project



Ageing Population

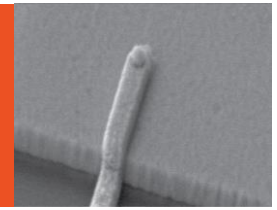
- Increased focus on “at home” care.
- Development of easy-to-use home diagnostic tools that allow elderly users to monitor chronic conditions like diabetes, cardiovascular health, and kidney function.
- Focus on cost-effective solutions that make home testing affordable, potentially reducing the burden on the public healthcare system

ARCHER TECHNOLOGIES
Biochip

Digitalisation

- Increasing use of data analytics and big data technologies – exponential growth in data centres
- New technologies required to make data centres more efficient and cost-effective
- Technological advancement driving exponential growth in the digital economy

ARCHER TECHNOLOGIES
TMR sensor



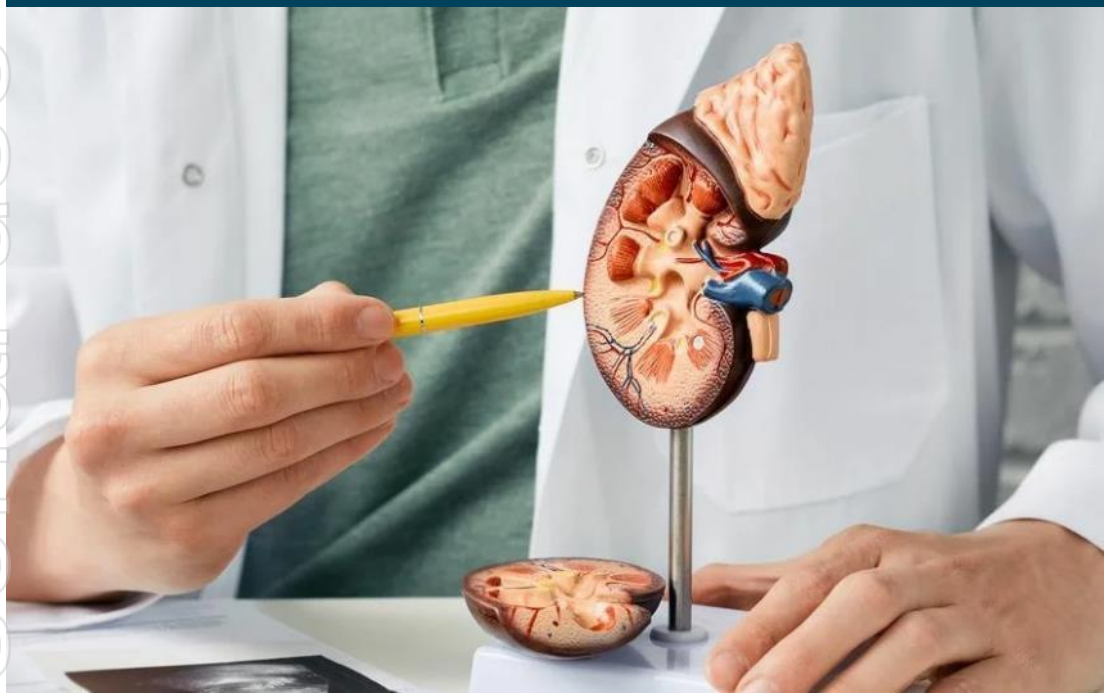
Decarbonisation

- Structural trend driving exponential growth of renewable energy sources
- Existing transmission network unable to cope with influx of renewable energy
- AI and technology solutions are required to make the network stable

Archer is assessing new technologies for development

Biochip – the problem & addressable market

Archer is developing a biochip that uses the highly sensitive, high speed, low power sensors to detect ions that could be integrated into a lab-on-a-chip device for advanced medical diagnostics.



- Chronic kidney disease affects more than 850 million people (>10% of the population).[1]
- Abnormal potassium levels can be lethal → kidney disease patients are at high risk as the kidneys control electrolytes like potassium.
- Testing can only be done in a clinical setting with analysis done via a lab. Current testing is performed monthly, which is too slow and not done frequently enough.
- >US$3B total addressable of the >US$80B renal disease market.[2]
- Extendable to heart disease and treatment.
- Extendable to other ion sensing applications in medicine and agriculture.

1. Kidney Care UK "1 in 10 people…", Hill N. et al. PLOS ONE (2016)
2. Yole "Biosensors Marketing Report 2024-32", Market Research Future "Renal Disease Market Report". Bottom-up estimate using refs above

Biochip – a ‘lab-on-a-chip’ for at home testing

- Developing a biosensor, based in graphene field effect transistors (gFET) to test for potassium in chronic kidney disease.
- High accuracy to bring testing for diseases like chronic kidney disease into the home at a low cost.

Game changing at-home potassium testing

High frequency of testing enables physicians to more effectively monitor and manage patients with the best available therapies and treatment.

Improved treatment for dialysis patients.

Potassium lowering drugs produced by pharmaceutical companies could be safely and regularly prescribed.

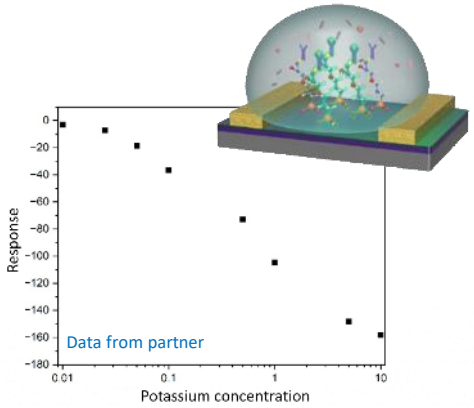
Patients in remote areas are empowered to take-action before its too late.

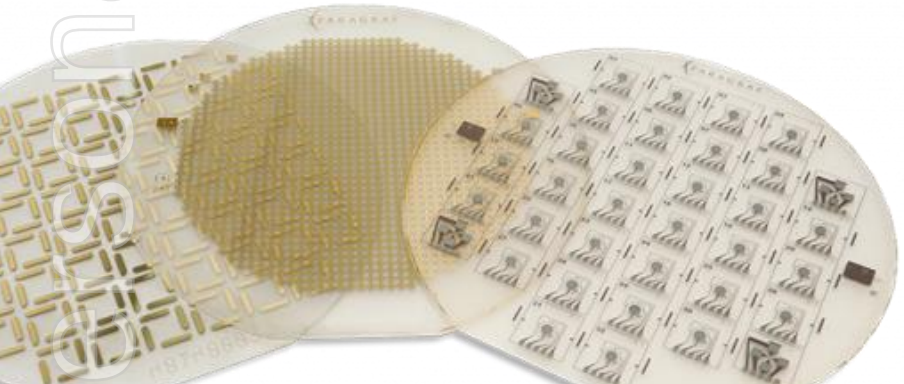
MUTUAL BENEFIT FOR ARCHER AND DRUG COMPANIES

Biochip – Potassium Sensing - Status

Proof of concept | Feasibility | Development & Optimisation | Launch

- Initial data
- Foundry supplier sourced
- Academic support





BEGINNING THESE PHASES

- Work ramping up in Sydney-Archer
- Forming partnerships with global diagnostics companies
- Building access to clinical advisors, potential trial locations
- Building academic partnerships in Australia

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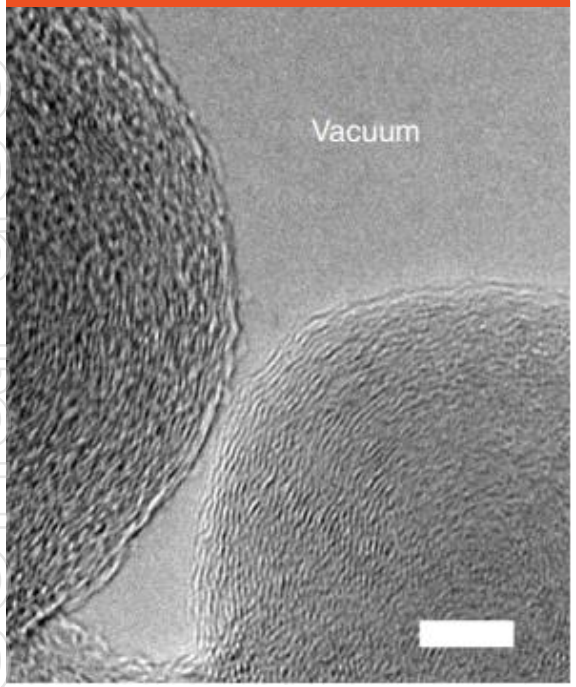
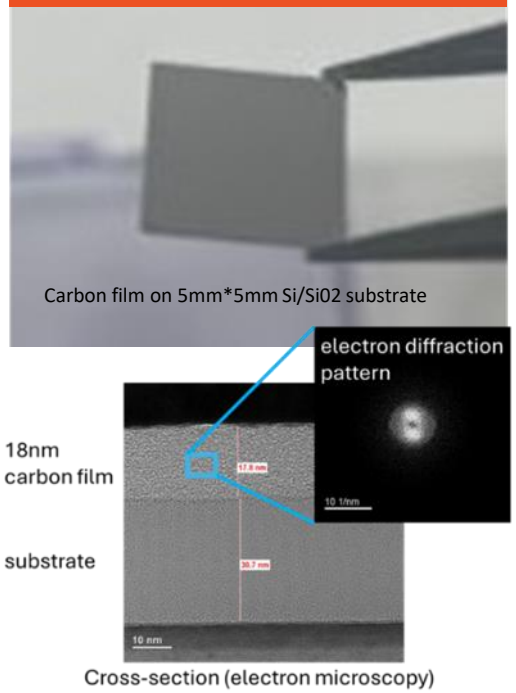
Quantum technology

Carbon Materials

Nano-onions



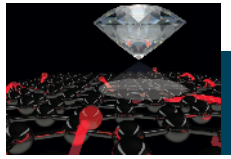
Patternable films



Applications

Magnetometers

MHz to THz detectors



Magnetic microscopes

Qubits

NEARER TERM

LONGER TERM

ARCHER

Quantum computing enables hundreds of use cases each with significant value-creation potential.

4 types

of computational problems and how quantum computing addresses them.

100+

USE CASES

Machine learning applications will impact most, if not all, industries.

SIMULATION

Precisely and efficiently simulate the dynamics of a quantum system.

- **Pharma:** drug discovery **$40 billion to $80 billion**
- **Aerospace:** computational fluid dynamics **$10 billion to $20 billion**
- **Chemistry:** catalyst design **$20 billion to $50 billion**
- **Energy:** solar conversion **$10 billion to $30 billion**
- **Finance:** market simulation (used in derivatives pricing) **$20 billion to $35 billion**

OPTIMISATION

Efficiently optimise solutions from complex and large data.

- **Logistics:** network optimization **$50 billion to $100 billion**
- **Insurance:** risk management **$10 billion to $20 billion**
- **Finance:** portfolio optimization **$20 billion to $50 billion**
- **Aerospace:** route optimization **$20 billion to $50 billion**

MACHINE LEARNING

Process data sets to reduce noise and simplify computations faster.

- **Automotive:** autonomous vehicle AI algorithm design **Up to $10 billion**
- **Finance:** money laundering and fruad prevention **$20 billion to $30 billion**
- **Tech:** generative, foundation and horizontal AI **$50 billion to $100 billion**

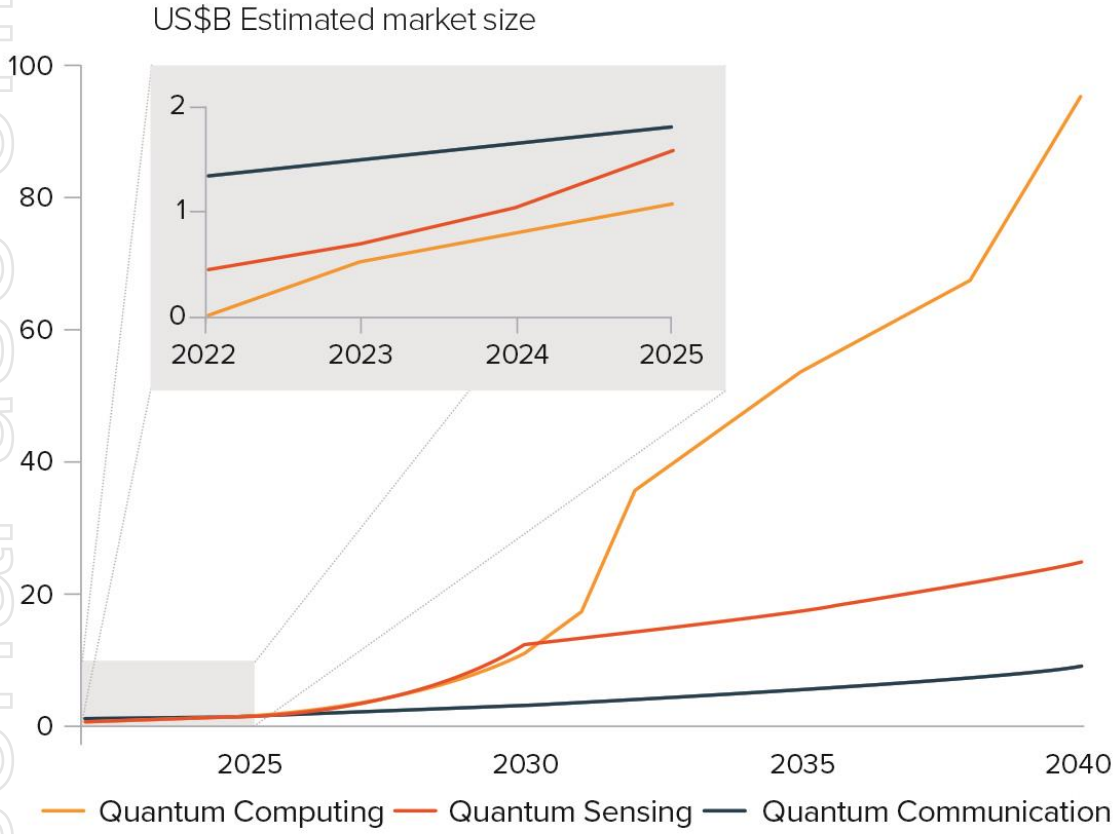
CRYPTOGRAPHY

Improve encryption protecting critical information.

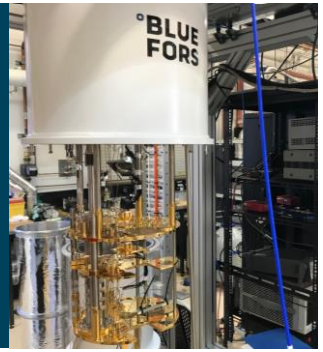
- **Government:** encryption and decryption (related to secure communications and cybersecurity)
- **Corporate:** encryption (related to secure communications and cybersecurity) **Up to $10 billion**

Source: BCG analysis. Note: USD.

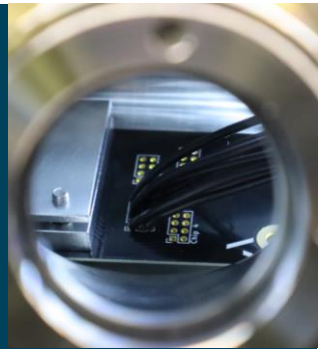
Archer considers quantum technology to be the next great technological advance. Expected large scale adoption after 2030.



Adoption of quantum tech expected to increase with quantum hardware maturity



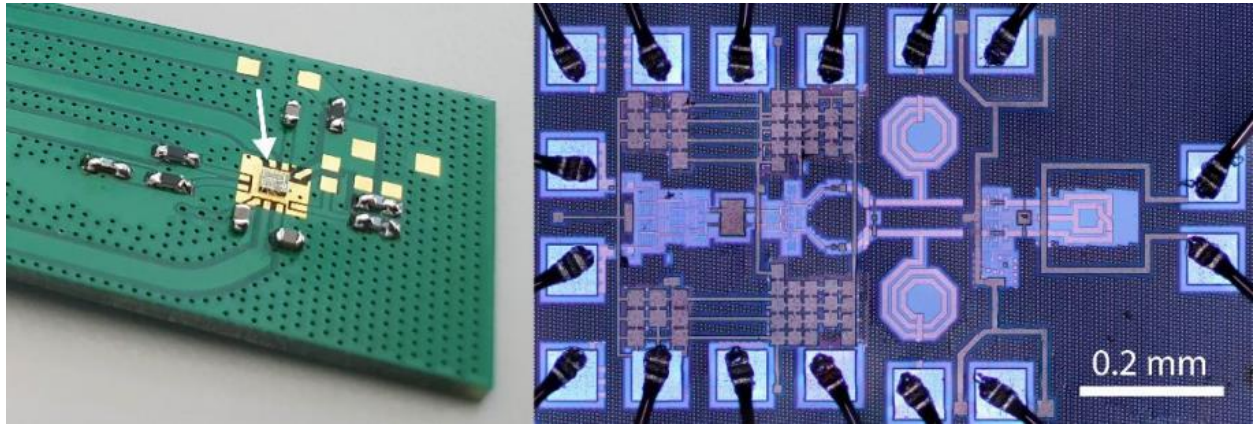
Quantum computing is expected to rapidly increase in share of total quantum value

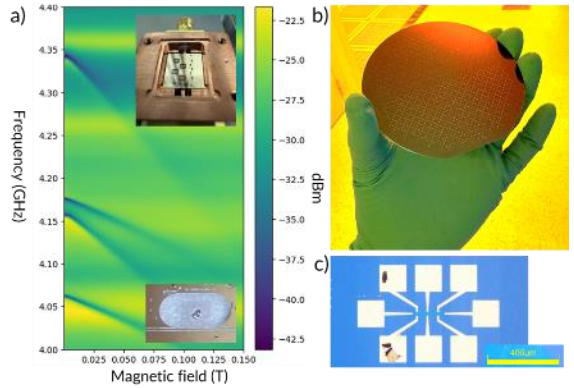


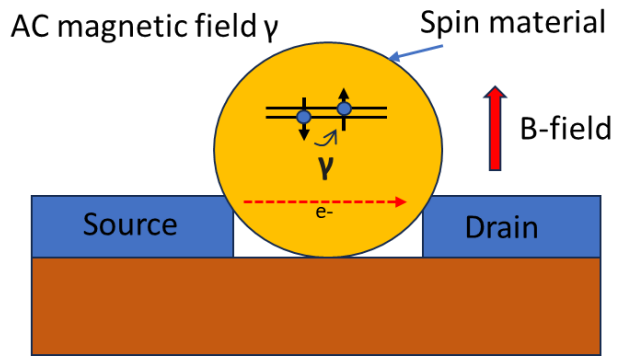
Sources:
BCG analysis
Krelina, "Quantum technology for military applications" EPJ Quantum Technology (2021); IBM quantum roadmap; IonQ quantum roadmap

Quantum technology – Status

- Recently bolstered manufacturability and scalability with a new carbon film.
- Probing microscale volumes of carbon material using pESR chip.
- Working with external collaborators to make progress on three fronts:
  - Improving materials properties and scaling to wafer-scale synthesis and processing;
  - Developing microwave resonant circuits to both probe and later control electron spin; and
  - Begun work on electrically detected spin resonance for readout.
- Building on team's expertise to investigate TMR sensors





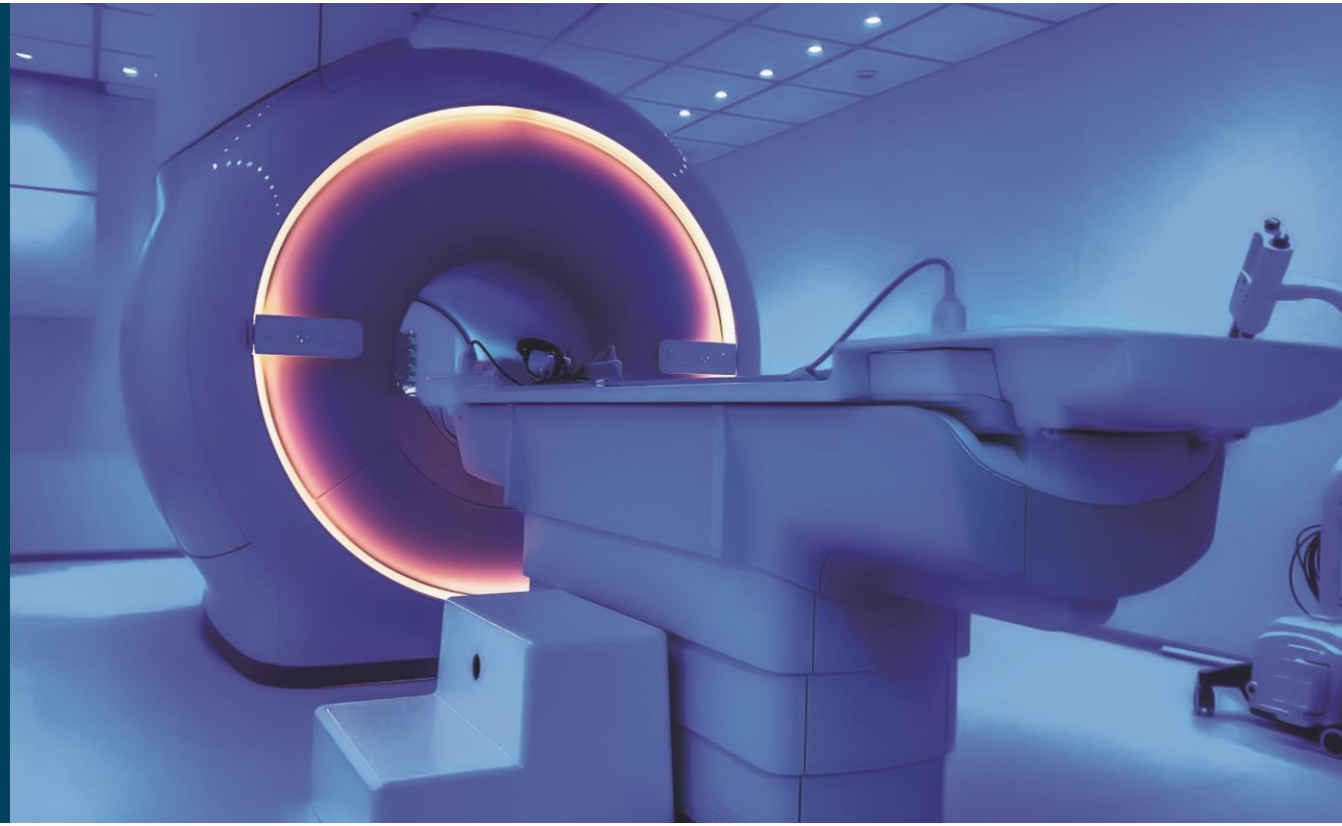


Archer set to tap into high growth TMR sensor market

- Overseas foundry to develop a tunnel magnetoresistance (“TMR”) sensor for Archer for commercial use in industrial applications.
- TMR sensors are ideal for many applications, including artificial intelligence, data centres, automotive, and the Internet of Things (IoT).
- TMR leverages quantum phenomena to provide a performance edge over classical incumbents.
- Part of Archer’s ^{12}CQ project, and leveraging its expertise in quantum mechanics to design advanced TMR sensors.
- Archer will finalise its TMR sensor design in the coming weeks, with the first prototypes to be delivered before the end of the year.
- Early next calendar year, Archer will commence work to optimise the TMR sensor design and engage with potential customers, potentially bringing forward revenue opportunities while it continues ^{12}CQ quantum development.

TMR Sensors – Key benefits

- High Sensitivity and Accuracy
- Ideal for detecting very small magnetic fields.
- Bidirectional sensing capabilities
- Low Power Consumption
- Enables use in battery-powered devices.
- Versatility
- Suited for various industries, including (but not limited to) automotive, medical devices, and IoT.



Two-Year Milestones

Year 1

Complete R&D phase and prototyping with MultiDimension Technology.

Secure partnerships with manufacturers in key industries.

Year 2

Begin commercialisation and sales.

Launch pilot projects in key verticals with initial customers.

Archer has the foundations in place to advance its technology towards commercialisation in global markets.

Future technologies

Archer's devices look to solve high value problems.

Strong partnerships

Archer has partnerships with foundries to help manufacture its technologies and with leading research institutions to help develop it's technologies.

Growing markets

Archer's technologies have a range of applications across growing markets such as medical diagnostics, data centres, IoT, and automotive.

IP portfolio

A growing IP portfolio of granted and pending patents across key markets such as North America, APAC, and Europe.

/ Summary of Proxies Received

	Votes For	Votes Against	Discretion of Proxy	Abstentions	Excluded
ORDINARY RESOLUTIONS					
RESOLUTION 1 - Adoption of Remuneration Report *'That the Remuneration Report for the year ended 30 June 2024 be adopted'*	18,169,584 80.99%	3,617,597 16.13%	646,777 2.88%	226,953	12,453,683
RESOLUTION 2 - Re-election of Kenneth Williams as a Director *'That Kenneth Williams be re-elected as a Non-Executive Director of the Company.'*	31,271,388 89.19%	3,125,137 8.85%	664,777 1.89%	53,392	-
RESOLUTION 3 - Approval to issue Incentive Options to Director Gregory English *'To approve the grant a total of 5,000,000 Incentive Options to Gregory English, a Director of the Company, or his nominee, as described in the Explanatory Memorandum.'*	17,030,196 76.23%	4,643,171 20.78%	669,002 2.99%	318,542	12,453,683
RESOLUTION 4 - Approval to issue Incentive Options to Director Bernadette Harkin *'To approve the grant a total of 3,000,000 Incentive Options to Bernadette Harkin, a Director of the Company, or her nominee, as described in the Explanatory Memorandum.'*	17,435,896 78.04%	4,237,471 18.97%	669,002 2.97%	318,542	12,453,683
RESOLUTION 5 - Approval to issue Incentive Options to Director Kenneth Williams *'To approve the grant a total of 3,000,000 Incentive Options to Kenneth Williams, a Director of the Company, or his nominee, as described in the Explanatory Memorandum.'*	17,425,196 78.00%	4,248,171 19.01%	669,002 2.99%	318,542	12,453,683
SPECIAL RESOLUTION					
RESOLUTION 6 - Approval of 10% additional placement capacity *'That, for the purpose of Listing Rule 7.1A, approval is given for the Company to issue Equity Securities totalling up to 10% of the issued capital of the Company (at the time of the issue) calculated in accordance with the formula prescribed in Listing Rule 7.1A.2 and on the terms and conditions described in the Explanatory Memorandum.'*	32,526,002 93.27%	1,676,218 4.81%	669,003 1.92%	243,371	-

12CQ TECHNOLOGY
BIOCHIP TECHNOLOGY

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Thank you

ASX Code: AXE

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

Archer Materials Limited
(ABN 64 123 993 233)

E: hello@archerx.com.au Visit us at: archerx.com.au

Sydney

Level 2, 477 Pitt St
Sydney NSW 2000
Australia

Adelaide

Lot Fourteen, Frome Road
Adelaide SA 5000
Australia

Stay in touch

Shareholders are encouraged to take advantage of the benefits of electronic communications by electing to receive communication from the Company and its share registry electronically.

Shareholders can change their communication preferences through the registry website: www.investorcentre.com

For more information about Archer's activities, and sign up to receive the latest news, reports, presentations and ASX released, please visit the following:

LinkedIn
www.linkedin.com/company/archerxau

Sign up to our Newsletter
http://eepurl.com/dKosXI

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This presentation contains information which was reported in ASX announcements lodged between 1 October 2017 and 13 February 2024 (together the "Announcements"). All material assumptions and technical parameters set out in the Announcements continue to apply and have not materially changed. The Announcements can be viewed online at https://www.archerx.com.au.

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