

ASX Announcement (ASX:AXE, Archer, Company)

14 October 2019

Corporate presentation

Attached is a Corporate Presentation for the purpose of presenting to shareholders at meetings ("Events") being held in Adelaide on Monday, 14th October 2019, and in Melbourne on Tuesday, 15th October 2019.

At the Events, Archer CEO, Dr Mohammad Choucair, and Executive Chairman, Mr Greg English, will provide attendees with an insight into Archer's key areas of strategic activity and the Company's significant progress in developing its Advanced Materials and Mineral Exploration businesses. This is an opportunity for shareholders to meet with management and learn more about the Company, its activities and recent developments.

For further information, please contact:**General Enquiries**

Dr Mohammad Choucair
Chief Executive Officer

Mr Damien Connor
Company Secretary

Tel: +61 8 8272 3288

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>

Medium:

<https://medium.com/@ArcherX>

Sign up to our Newsletter:

<http://eepurl.com/dKosXI>

/ Corporate Presentation

ARCHER

Excellence in materials technology.
October 2019

/ Disclaimer

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This document may contain forward-looking statements with respect to the financial condition, results of operations, and business strategy of the Archer Group. These forward-looking statements are based on estimates, projections and assumptions made by the Archer Group about circumstances and events that have not yet taken place. Although the Archer Group believes the forward-looking statements to be reasonable, they are not certain. Forward-looking statements involve known and unknown risks, uncertainties and other factors that are in some cases beyond the Archer Group’s control, and which may cause actual results, performance or achievements to differ materially from those expressed or implied by the forward-looking statements (and from past results). The Archer Group makes no representation or warranty as to the accuracy of any forward-looking statements in this presentation and undue reliance should not be placed upon such statements. Forward-looking statements may be identified by words such as “aim”, “anticipate”, “assume”, “continue”, “could”, “estimate”, “expect”, “intend”, “may”, “plan”, “predict”, “should”, “will”, or “would” or the negative of such terms or other similar expressions that are predictions of or otherwise indicate future events or trends. The forward-looking statements included in this presentation speak only as of the date of this presentation. The Archer Group does not intend to update the forward-looking statements in this presentation in the future.

This presentation contains information which was reported in ASX announcements lodged between 1 October 2017 and 30 October 2019, and 30 April 2012 (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>.

Certain statistical and other information included in this presentation is sourced from publicly available third party sources and has not been independently verified.

/ Company Snapshot

Archer Exploration Limited

ASX: AXE

/ Board and Executive Management



Executive Chairman
Greg English
LLB, BE (Mining)



Non-Executive Director
Alice McCleary
DUniv, BEc FCA FTIA FAICD



Non-Executive Director
Paul Rix
B.Com FAICD



Chief Executive Officer
Mohammad Choucair
PhD, FRACI FRSN GAICD



**Chief Financial Officer &
Company Secretary**
Damien Connor
CA GAICD AGIA B.Com





/ Capital Structure

\$696k^{*}

Cash at bank as of 30 Jun 2019

197.1m

Number of ordinary shares on issue

\$0.15

Share price (9 Oct 2019)

\$29.6m

Market capitalisation (9 Oct 2019)

28%

Of issued shares held by top 20 shareholders

8%

Of issued shares held by Archer's Board and Executive Management

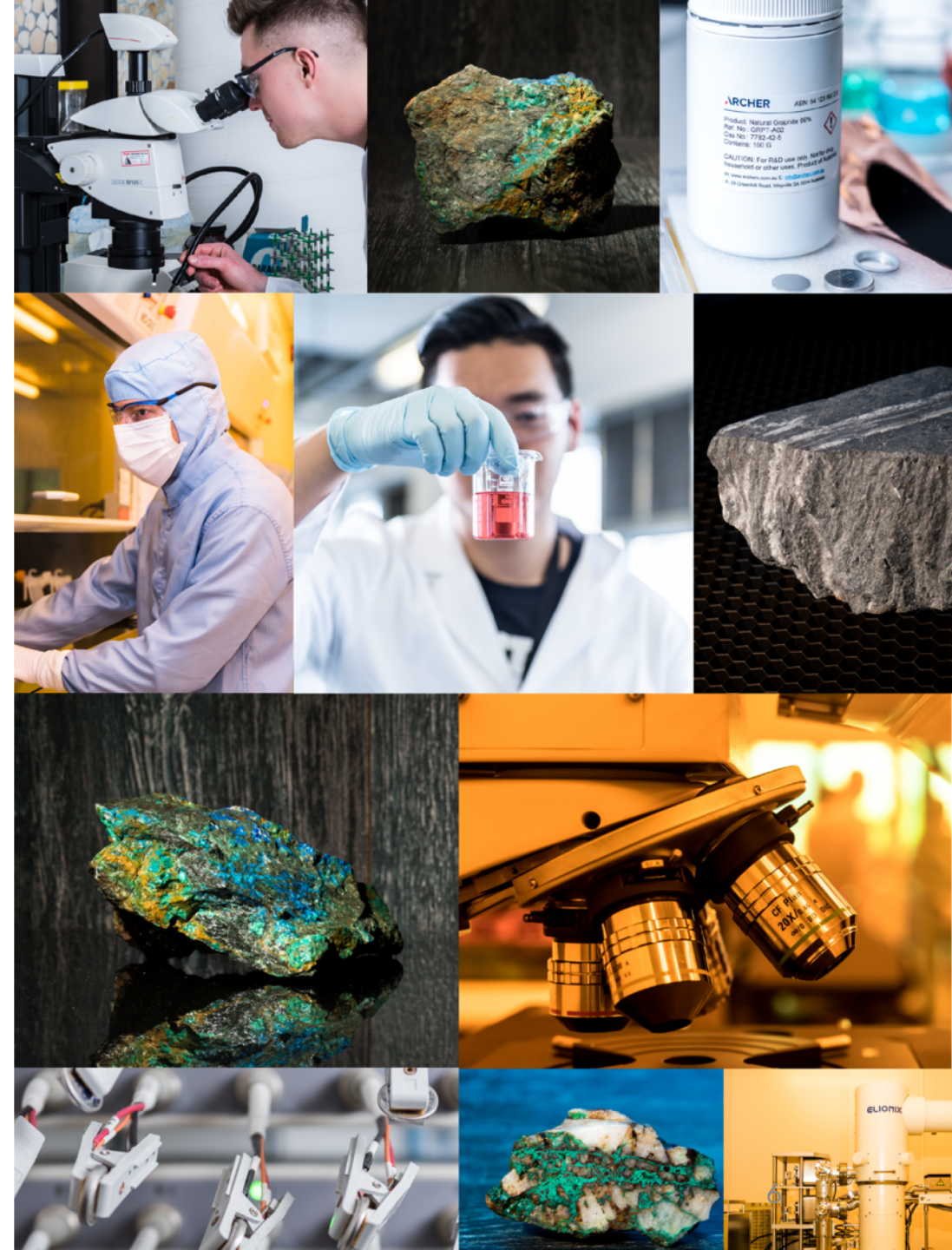
- + No corporate debt.
- + No unlisted options or performance rights.

* Jul 2019 Archer received \$1.35m cash for the sale of a land asset.

/ A Materials Technology Company

Archer provides shareholders exposure to financial returns from innovative technologies and the materials that underpin them.

We aim to achieve this through our two business functions of Advanced Materials and Mineral Exploration.



/ Advanced Materials and Mineral Exploration

Archer has been listed on the ASX since 2007 and owns and has exclusive rights to patents and tenement assets.

Maximising the value of our patents and tenements involves development and integration along the materials lifecycle.

Our focus is on realising the maximum value of our assets by commercialisation at various stages of the materials lifecycle.

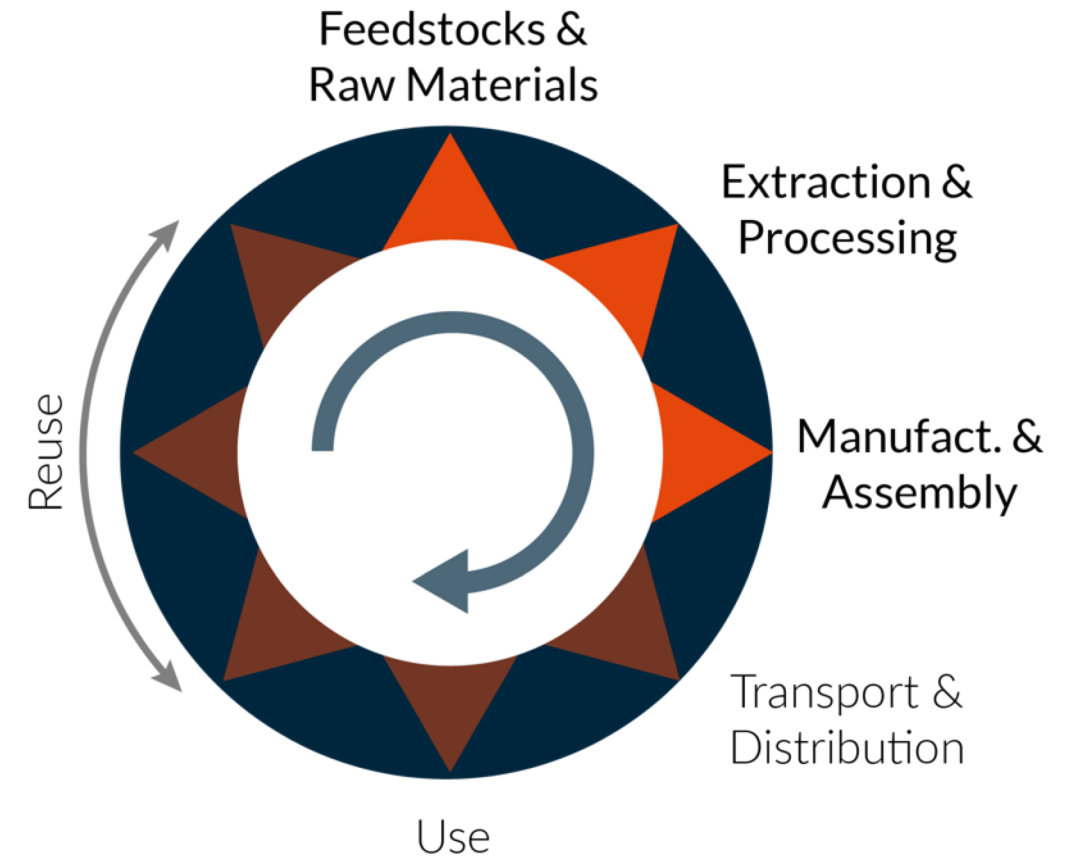


Fig 1. The materials lifecycle and focus of Archer's activities in Feedstocks & Raw Materials to Manufacturing & Assembly.

**Materials are the tangible
basis of all technology.**



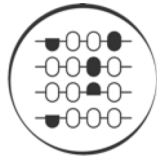
Archer affiliate preparing carbon electrodes with materials from Carbon Allotropes' inventory.

The acquisition of Carbon Allotropes enabled Archer to expand its market position






Archer's growth involves contributing to complex global challenges. These challenges require **access to materials** that are the basis of modern electricity, healthcare, and computing. Both developed and underdeveloped markets' needs are underpinned by advances in technology and the paradigm shifts that accompany them. Archer is uniquely positioning to meet these needs through its advanced materials & technology.

The acquisition of Carbon Allotropes in late 2017 spearheaded and expanded Archer's global reach. This delivered Archer world-class expertise, a diverse advanced materials inventory, and **access to over \$300m in product R&D infrastructure**. This has allowed us to rapidly identify, evaluate and respond to market opportunities for acquisitions, partnerships, and growth.

/ Significant Developments in 2018-2019






Quantum Technology

-  Archer obtains exclusive licence to quantum technology IP (QTIP)
-  QTIP patents lodged in Australasia, the US, and EU
-  Pioneering quantum physicist Dr Martin Fuechsle joins Archer
-  Access agreements signed to access chip building foundry and ^{12}CQ commences
-  First components of ^{12}CQ qubit processor chip assembled







Human Health

-  High quality graphene inks prepared and tested for printed biosensing technologies
-  Provisional patent lodged for graphene-ink biosensing technology
-  Material transfer agreement signed with German biotech
-  Human antibodies printed on graphene biosensors



Reliable Energy

-  Collaboration & access agreements to build & test li-ion battery cells
-  Full-cell Li-ion batteries produced with Campoona graphite in-line with industry state-of-art requirements
-  Spherical graphite produced from Campoona graphite matching market requirements for Li-ion batteries
-  Li-ion batteries produced using Campoona spherical graphite

Archer's key value-add activities:



Acquisitions & Partnerships



Materials & Tech. Development



Commercialisation

^{12}CQ

**Building a world-first
qubit processor chip**



Successful commercialisation of Archer's ^{12}CQ chip technology could catalyse a global multibillion dollar industry

\$30b

Forecast size of quantum computing industry in 2022¹

\$715b

Global semiconductor industry revenue²

70%

Of semiconductor manufacturing located in Asia²

50%

Global quantum computing funding in EU, North America, AU³

\$4b

Revenue in Australian consumer electronics market⁴

88%

Australians now own a smartphone⁵

¹Quantum Computers: Solving problems in Minutes, not Millennia. Goldman Sachs. Feb 2018. <http://www.goldmansachs.com/our-thinking/pages/toshiya-hari-quantum-computing.html>

²Global Semiconductor and Electronic Parts. IBISWorld Industry Report. May 2018.

³<https://www.bcg.com/en-au/publications/2018/next-decade-quantum-computing-how-play.aspx>

⁴Statista. Consumer Electronics. 2019.

<https://www.statista.com/outlook/251/107/consumer-electronics/australia>

⁵Deloitte. Mobile Consumer Survey. 2017.

http://landing.deloitte.com.au/rs/761-IBL-328/images/tmt-mobile-consumer-survey-2017_pdf.pdf

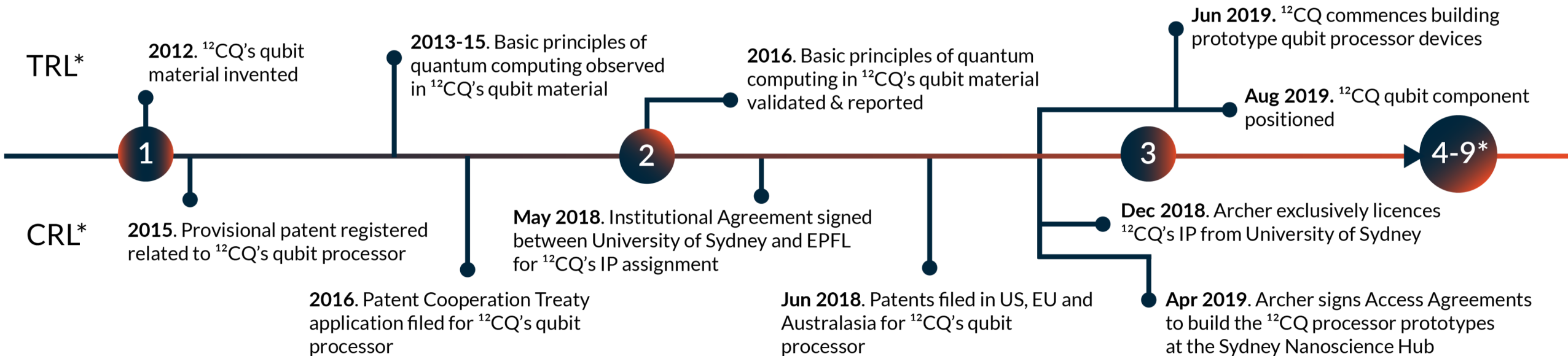
Successful development of Archer's ^{12}CQ chip could enable widespread ownership of quantum computing powered technology

- 1 World-record room-temperature qubit stability**
Archer is using the only reported conducting material capable of stable and robust quantum information processing at **room temperature**⁶.
- 2 Simple to integrate quantum materials**
The chip forms the most crucial hardware component of a universal quantum computer to function under practical conditions to **allow on-board mobile device integration**.
- 3 Best-in-class chip prototyping and testing**
No need for low temperatures, well-defined crystals, atomic manipulation, or the use of metals; all key technological barriers to current qubit chip development.

⁶<https://www.nature.com/articles/ncomms12232>



/ Commercial Pathway



TRL of Current Quantum Computing Technology**

- 1 Topological (e.g. Microsoft)
- 3 Silicon (e.g. Silicon Quantum Computing)
- 3 Photonic (e.g. Xanadu)
- 4 Trapped Ion (e.g. IonQ)
- 5 Superconducting (e.g. IBM, Rigetti, D-Wave, Intel)

Current Global Investment^

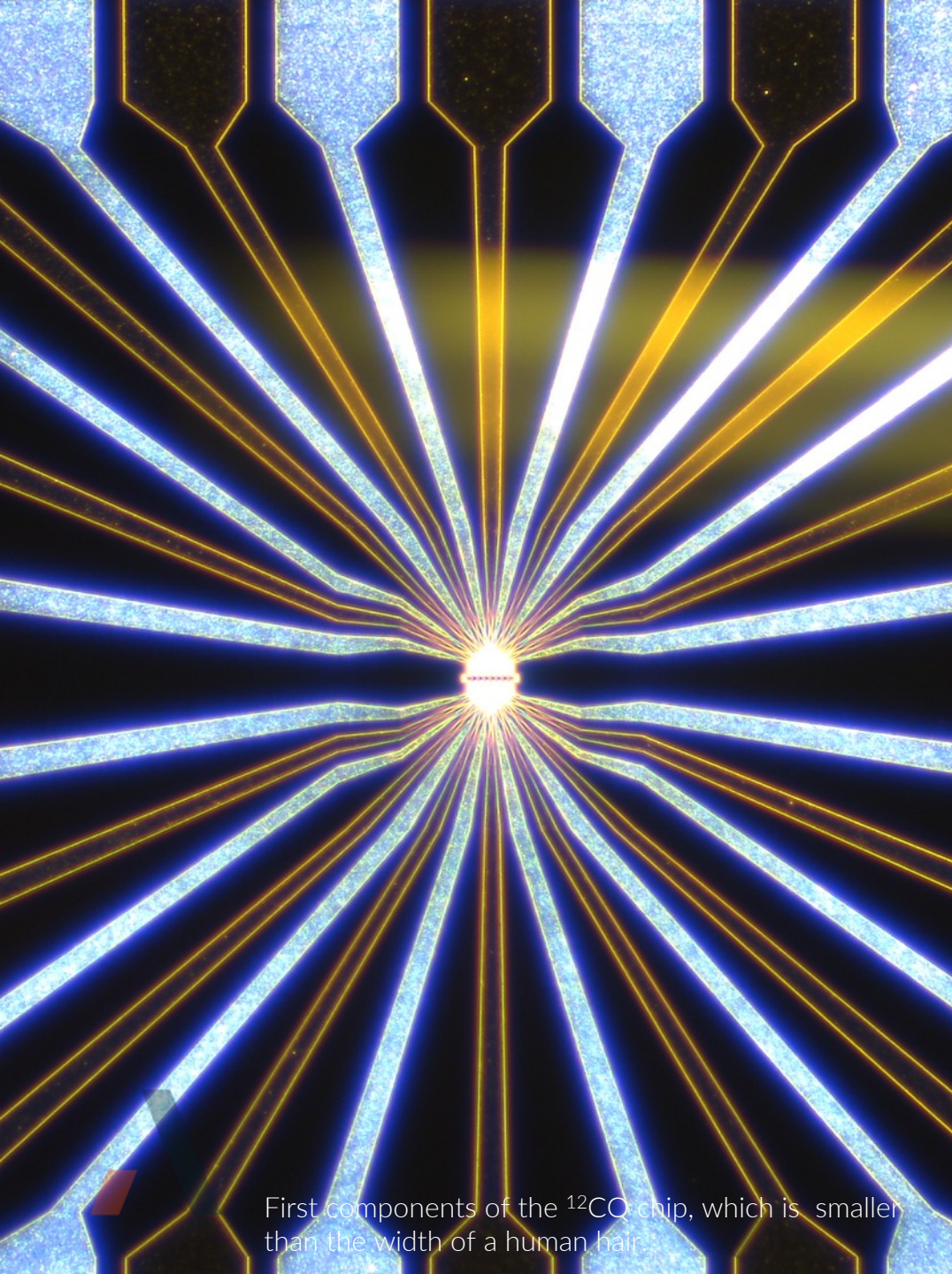
China	+\$3b
US	+\$1.3b
EU	+\$1.1b
UK	+\$0.4b
AU, CA, ISR	+\$0.1b

First Sales of Quantum Computers^^

D-Wave	+\$10m per unit
<i>Customers</i>	Lockheed Martin, Google, Volkswagen Los Alamos National Laboratory, Oak Ridge National Laboratory

*Archer self assessed Technology Readiness Level and Commercial Readiness Level. See Appendices.

**BCG assessed TRL; examples may currently vary in TRL. See: ^<https://www.bcg.com/en-au/publications/2018/next-decade-quantum-computing-how-play.aspx> and <https://www.bcg.com/publications/2019/quantum-computers-create-value-when.aspx> ^^www.dwavesys.com



First components of the ^{12}CQ chip, which is smaller than the width of a human hair.

The commercialisation pathway involves applying well-established business models in the semiconductor industry

Our strategy is to develop a qubit processor chip that can be directly sold and the intellectual property rights to the chip technology sublicensed by:

- 1 De-risking the ^{12}CQ Technology**
Building a room-temperature operational qubit processor chip prototype involves assembling and testing chip components by applying a deep understanding of nanotechnology, materials chemistry, and quantum physics.
- 2 Minimum Viable Product Solution**
Establishing partnerships with highly resourced organisations in the semiconductor industry, and prosecuting patent applications in Australasia, Europe and the US, to provide the commercial freedom to operate.

Printable graphene biosensors





Archer affiliates preparing materials and chemical precursors at the ARC Graphene Hub.

Successful commercialisation of Archer's biosensor technology could disrupt a global multibillion dollar industry

\$27b

Forecast size of biosensor industry in 2022⁷

43.5%

Cash refund of annual R&D spend in Australia for SMEs⁸

\$20b

Australian industry spend on R&D 2018⁸

140+

Life sciences companies on the ASX in 2018⁸

⁷Biosensors Market by Application, Global Forecast to 2022. Market and Markets, 2017.

⁸<https://www.nature.com/articles/d41586-018-05092-2>

Successful development of Archer's printable biosensor could enable rapid & customised multi-disease detection

1 World-first graphene biosensor materials

Archer is using the only reported graphene materials capable of stable and robust selective hierarchal chemistries compatible to the **single molecule level**^{9,10}.

2 Simple to integrate functionality & detection

By **digitising** the manufacture of biosensor componentry we are overcoming key commercial and technological barriers to current printable biosensor development.

3 Best-in-class biosensor device prototyping

The graphene ink formulations form the most crucial component of a **printable biosensor** to allow multiplexing function under practical detection conditions.

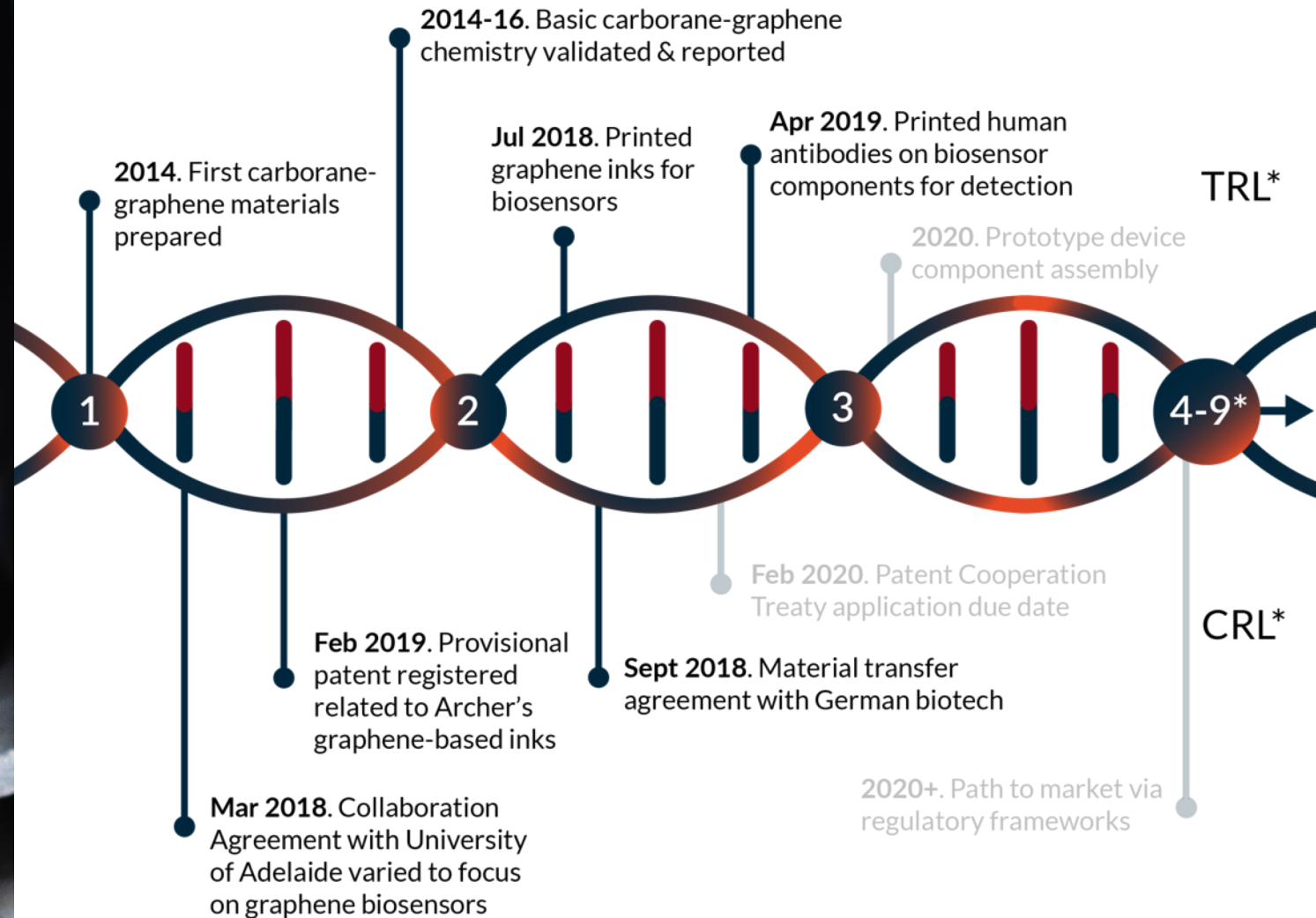
⁹<https://pubs.rsc.org/en/content/articlelanding/2014/cc/c4cc04521a#!divAbstract>

¹⁰<https://pubs.rsc.org/en/content/articlelanding/2016/CC/c5cc07611k#!divAbstract>



Printers used at the ARC Graphene Hub to prepare graphene-based electrode components.

/ Commercial Pathway



The commercialisation pathway involves applying the triple-helix business model⁺ for biotechnology innovation

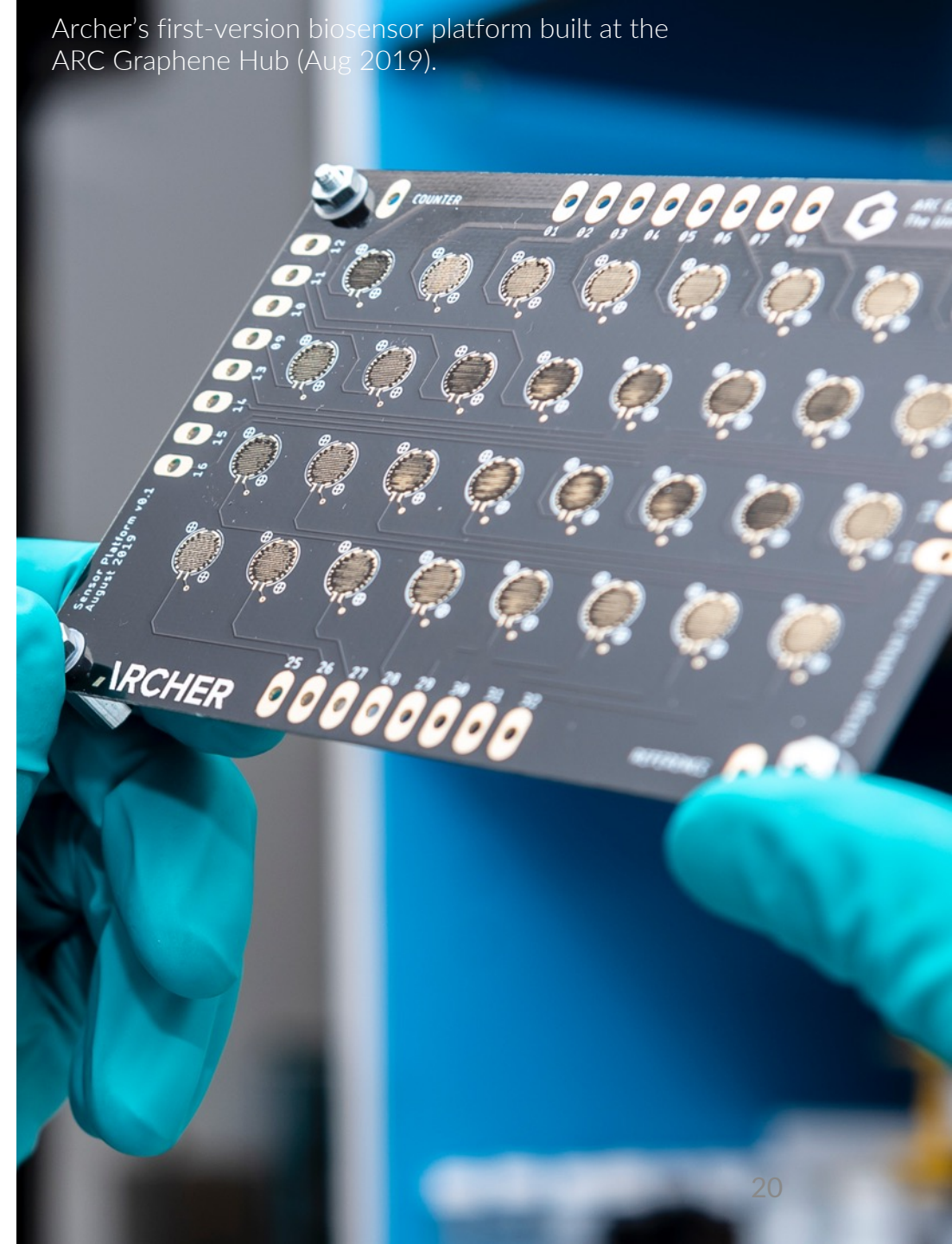
Our strategy is to develop printable graphene-based biosensor componentry and sublicense the associated intellectual property rights by:

1 Proof-of-concept Validation

Developing commercial prototype *in-vitro* diagnostic biosensing devices by assembling and testing proprietary graphene-based componentry capable of enabling rapid multi-disease detection and device integration.

2 Securing Intellectual Property Requirements

Filing a strong Patent Cooperation Treaty application for prosecution in jurisdictions including Australia, the US and EU while establishing partnerships with highly resourced organisations in the biotechnology industry.



⁺https://triplehelix.stanford.edu/3helix_concept

Graphite for lithium-ion batteries



Archer affiliates preparing lithium-ion batteries for testing with Archer graphitic materials at UNSW.

Successful commercialisation of Archer's graphite could secure supply-side markets in a global multibillion dollar industry

\$130b

Forecast size of Li-ion battery industry in 2028¹¹

\$7k/t

Spherical graphite materials entry point for Li-ion batteries¹²

30m

Forecast number of sales of electric vehicles (EV) by 2030¹³

39%

Of global EV market forecast in China by 2030¹⁴

¹¹<https://www.idtechex.com/research/reports/li-ion-batteries-2018-2028-000557.asp>

¹²<https://www.benchmarkminerals.com/heilongjiang-china-tops-90000-tpa-spherical-graphite-output-as-evbattery-demand-surges/>

¹³<https://bnef.turtl.co/story/evo2018?teaser=true>

¹⁴<https://www.bcg.com/documents/file36615.pdf>

Successful development of Archer's graphite could address the trade-off between cost and battery performance

1 High-quality graphite materials

We have confirmed Archer's Campoona graphite is **structurally near-perfect** down to the atomic scale and is suitable for use in batteries¹⁵.

2 High-value graphitic material feedstocks

We have prepared **spherical graphite materials** that meet key established market requirements for use in lithium-ion battery applications¹⁶.

3 Best-in-class battery testing and validation

Archer has formulated, built, and tested full-cell lithium-ion batteries using **Campoona graphite anodes** with different end-use cathode chemistries¹⁷.

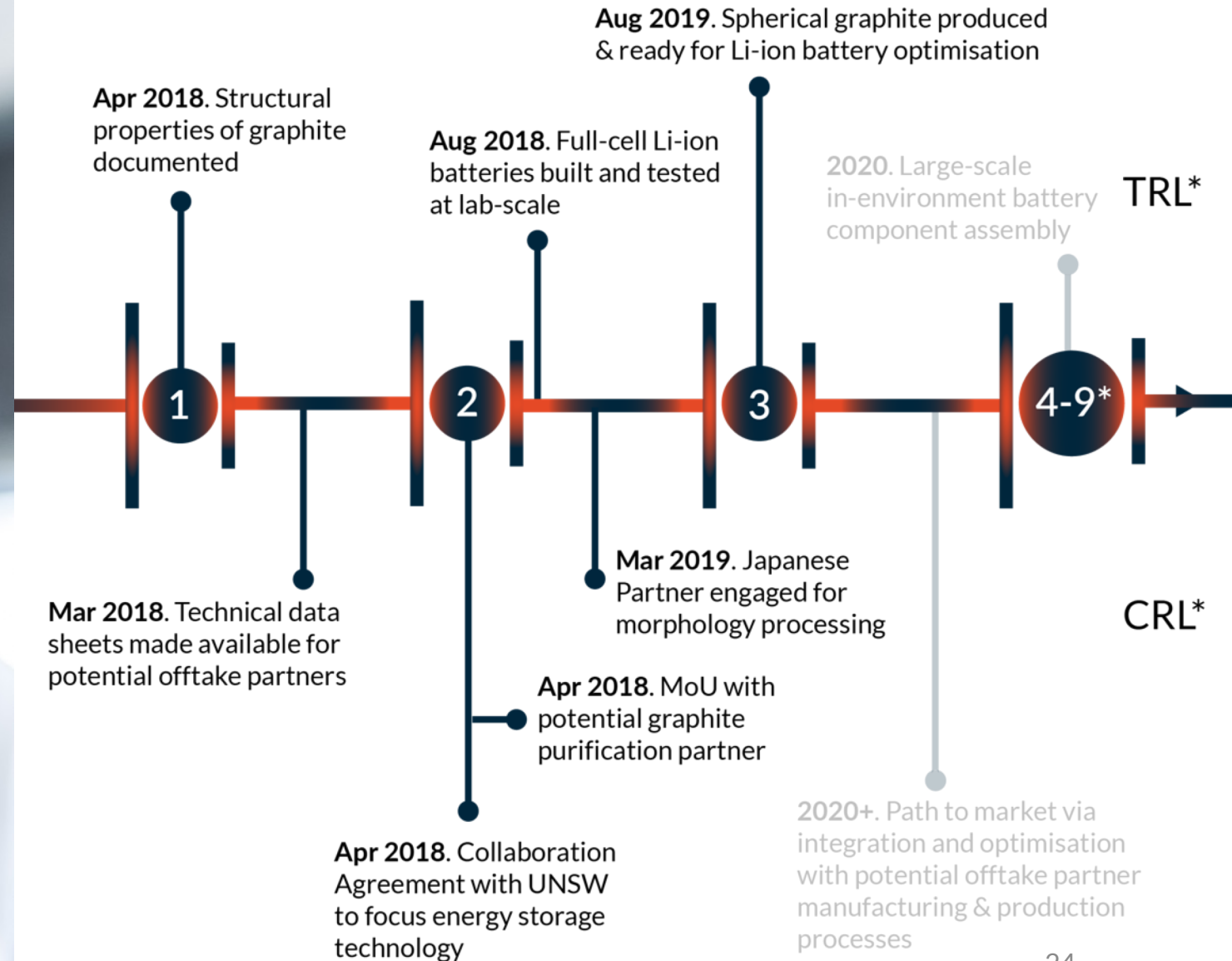
¹⁵https://archerx.com.au/src/uploads/2018/04/20180406_Technical-analysis-proves-high-quality-of-Campoona-graphite-ASX-Release.pdf

¹⁶https://archerx.com.au/src/uploads/2019/03/20190312_Spherical-graphite-produced-from-Campoona-deposit-ASX-Release.pdf

¹⁷https://archerx.com.au/src/uploads/2019/08/20190808_Campoona-spherical-graphite-ready-for-battery-optimisation-ASX-Release.pdf

Archer affiliates preparing chemical adducts & precursors to materials' syntheses at UNSW.

/ Commercial Pathway



The commercialisation pathway involves downstream product integration in the lithium-ion battery supply chain

Our strategy is to establish customer relationships that underpin the development of our substantial Campoona graphite resource by:

1 Materials Integration & Optimisation

Developing and testing the high value-added graphite materials products and processes, in real-world full-scale lithium-ion batteries, to meet minimum performance requirements and market accepted benchmarks.

2 Validating Customer Solutions

Establishing commercial viability in efficiently scaling post-concentrate processes with industry partners for potential off-take agreements so that our graphite resource can be successfully developed to return maximum benefit to shareholders and the community.

Archer graphite materials used to prepare lithium-ion battery coin-cells.



Exploring for critical minerals





Archer rock sample containing copper from Yanlowinna.

Successful monetisation of Archer's tenements could be vital for securing critical minerals for global economies

\$60b+

Approx. global market value of critical minerals in Australia¹⁸

\$300m+

Invested by the Australian Government to de-risk mineral exploration in Australia¹⁸

50+

Critical minerals listed by the Australian and US Governments¹⁹

87.6%

Of all Australian mining exports accounted by China, Japan and South Korea²⁰

¹⁸<https://www.industry.gov.au/sites/default/files/2019-03/australias-critical-minerals-strategy-2019.pdf>

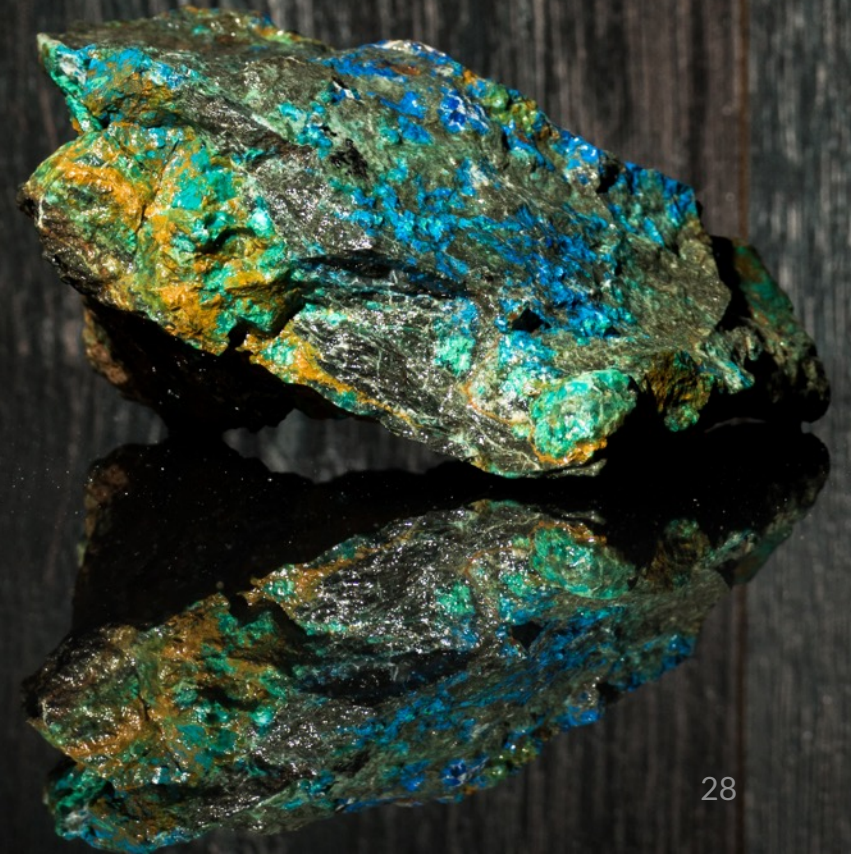
¹⁹<https://www.ga.gov.au/about/projects/resources/critical-minerals>

²⁰<https://www.ibisworld.com.au/industry-trends/market-research-reports/mining/mineral-exploration.html>

Successful exploration of Archer's tenement areas could lead to significant mineral discoveries

- 1 A broad-scope portfolio of tenement interests**
Archer maintains 100% ownership of 22 Exploration Licences for a **diverse range of minerals**, and 1 Mining Licence for Graphite, all of which are located in Australia.
- 2 Increased potential for capturing large targets**
Archer's exploration spans district to deposit scales with ongoing activity targeting prospective areas for high-value commodities like **copper, gold, cobalt, & graphite**.
- 3 Effective technical & operational capabilities**
We have managed ongoing **successful drilling programs** to identify geological anomalies and prospective areas defined by intersections of such anomalies[†].

[†]Archer Exploration Limited Annual Report (2019) pages 21 – 31.
<https://archerx.com.au/src/uploads/2019/09/Archer-Annual-Report-WEB-small.pdf>



/ Key Mineral Exploration Projects



Graphite



Tin



Tungsten



Copper



Alumina



Gold



Magnesite



Nickel



Cobalt



Manganese



We announced[§] an Exploration Target for our Eyre Peninsula **High Purity Alumina Project** located 12km south of Kimba, South Australia:

- + Based on historical drilling that intersected substantial widths of HPA mineralisation over an extensive area.
- + Ideally situated close to existing rail, power, gas and other significant infrastructure.
- + HPA is critical to a number materials technology applications.

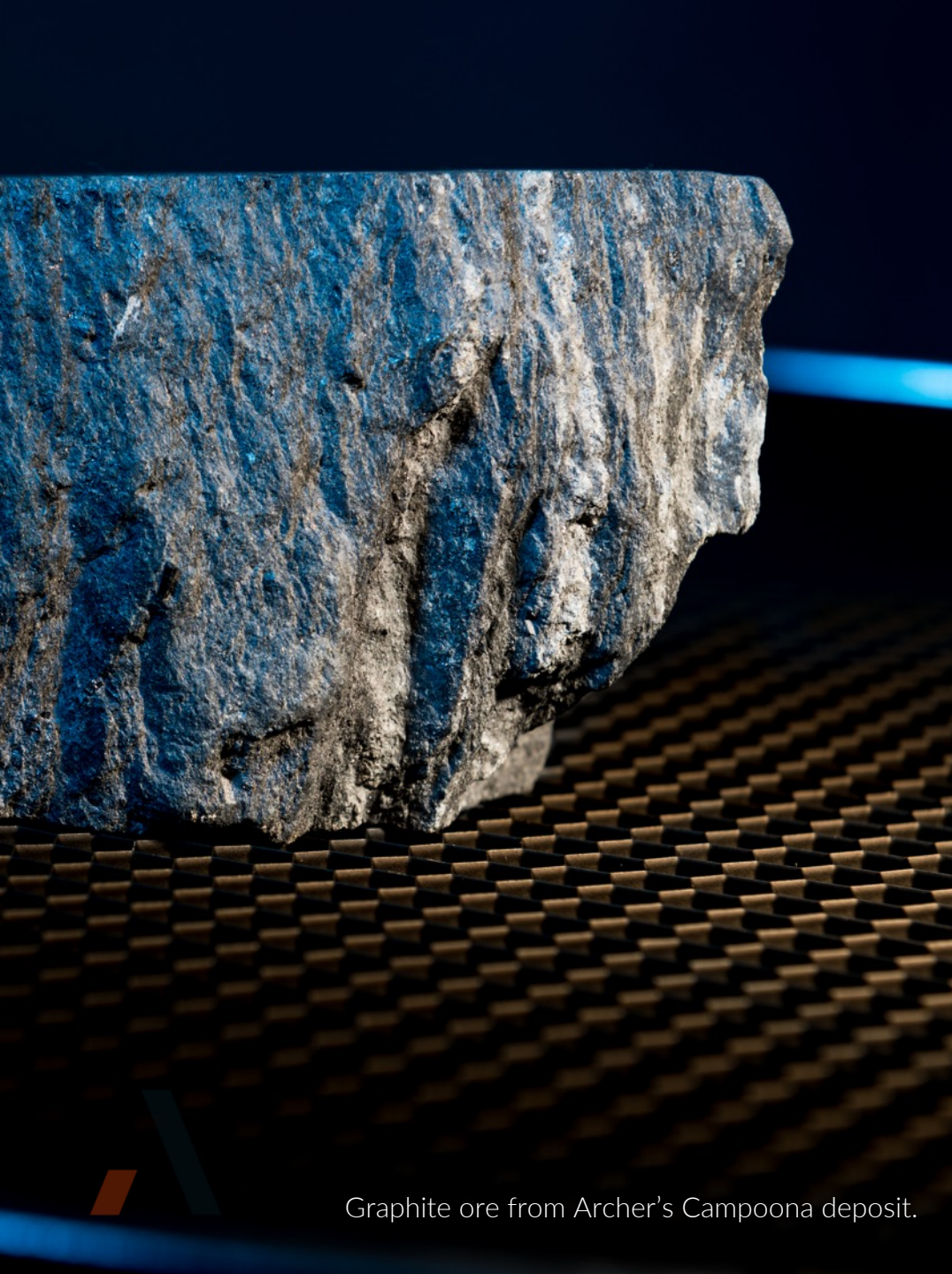


Independent review[‡] confirmed our Albion Downs **Nickel Project** is prospective for nickel mineralisation, 18km NNW of Mt Keith, Western Australia:

- + Historical work found the same types of rocks containing nickel compounds as present at the nearby Mt Keith nickel mine.
- + The tenement adjoins the tenements of the world's two biggest nickel miners, BHP Billiton and MPI Mines' (Norilsk).
- + Nickel is a high-value critical mineral.

[§]https://archerx.com.au/src/uploads/2019/08/20190819_Eyre-Peninsula-High-Purity-Alumina-Exploration-Target-ASX-Release-1.pdf

[‡]https://archerx.com.au/src/uploads/2019/10/20191008_Albion-Downs-Nickel-Project-update-ASX-Release.pdf



Graphite ore from Archer's Campoona deposit.

The commercialisation pathway involves the monetisation of globally in-demand tenements for exploration and mining

Our strategy is to identify a pipeline of economically proven resources for the future development, production and export of critical minerals by:

1 Exploring for Mineral Deposits

Manage a number of exploration projects to locate ore bodies in Australia that may be mined and provide the necessary data to potential development partners and independent reviewers for the evaluation of prospect viability.

2 Acquisition and Sale of Assets

Realising value and value-add returns by strategically acquiring new tenements and/or selling the rights to existing tenements; with Archer having successfully sold over \$11m in assets since 2012, including to BHP Billiton[‡].

[‡]Archer Exploration ASX Announcement (April 2012)
<https://www.asx.com.au/asxpdf/20120430/pdf/425x9jbj97wjcd.pdf>

/ Strategic Direction

The Path Forward

/ Company News Flow

Over the next 12 months key aspects of our strategy to provide shareholder returns include:

- + **Accelerating ^{12}CQ toward commercialisation**
World-first componentry assembly and device testing, and engagement with quantum computing industry partners.
- + **Patenting and developing graphene biosensors**
Patent Cooperation Treaty application decision point, and development milestones in building proof-of-concept devices.
- + **Integrating & advancing the Campoona graphite project**
Producing high-value downstream graphite materials and identification of project co-development partners.
- + **Monetising our mineral exploration project pipeline**
The effective, timely, and strategic exploration, sale, and acquisition of value-added mineral exploration tenements.



Archer Exploration Limited

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

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



Appendices

Annual General Meeting General Business (ASX Announcement 24 September 2019)

Ordinary Resolutions

1. Remuneration Report
2. Re-election of Alice McCleary as a Non-Executive Director
3. Ratification of prior issue of Placement Shares
4. Approval to issue up to 30,000,000 New Shares
5. Approval of Performance Rights Plan and Share Option Plan
6. Approval to issue Incentive Options to Employees
7. Approval to issue Incentive Options to Director Gregory English
8. Approval to issue Incentive Options to Director Alice McCleary
9. Approval to issue Incentive Options to Director Paul Rix

Special Resolutions

10. Approval of 10% additional placement capacity
11. Change of Company name (Archer Materials Limited)
12. Renewal of proportional takeover provisions in the Constitution



Appendices

Board and Executive Management (Slide 4)

Greg English LLB, BE (Mining)
Executive Chairman

Greg English is the co-founder Archer. He has been Chairman of the board since 2008 and has overseen Archer's transition from a South Australian focussed minerals exploration company to a diverse materials technology company. He has more than 25 years of engineering and legal experience and has held senior roles for Australian and multinational companies. Greg has received recognition for his work as a lawyer in The Best Lawyers® in Australia, 2020 Edition in the area of Commercial Law.

Alice McCleary DUniv, BEc FCA FTIA FACID
Non-executive Director

Alice McCleary is a Chartered Accountant. She is Deputy Chair of the Uniting Church of South Australia's Resources Board. She is a former Chairman of ASX Listed Company Twenty Seven Co. Limited (ASX:TSC) and former Director of Adelaide Community Healthcare Alliance Inc. (ACHA), Benefund Ltd and Forestry Corporation of South Australia. Previous leadership roles include Vice-President of the South Australian Chamber of Mines and Energy (SACOME), Deputy Chancellor of the University of South Australia and National President of the Taxation Institute of Australia. Alice's professional interests include financial management and corporate governance.

Paul Rix B.Com, FACID
Non-executive Director

Paul Rix was appointed as a Director of the Company on 8 February 2016. Paul Rix is an experienced mining professional with more than 30 years' experience in the marketing of industrial minerals and products. From 2003 – 2013, Paul worked for Queensland Magnesia Pty Ltd (QMAG) as General Manager Marketing where he was responsible for the development and implementation of QMAG's long term marketing strategy, focusing on diversification of magnesia products and markets whilst maintaining high plant utilisation. His magnesia marketing responsibilities stretched across six continents and more than 30 countries.



Appendices

Board and Executive Management (Slide 4)

Mohammad Choucair *PhD, FRACI FRSN GAICD*
Chief Executive Officer

Dr Mohammad Choucair was appointed Chief Executive Officer on 1st December 2017. Dr Choucair has a strong technical background in nanotechnology, and has spent the last decade implementing governance, control and key compliance requirements for the creation and commercial development of innovative technologies with global impact. Dr Choucair served a 2-year mandate on the World Economic Forum Global Council for Advanced Materials and is a Fellow of both The Royal Society of New South Wales and The Royal Australian Chemical Institute. He has a strong record of delivering innovation and has been recognised internationally as a forward thinker.

Damien Connor *CA GAICD AGIA B.Com*
Chief Financial Officer & Company Secretary

Damien Connor was appointed Company Secretary on 1 August 2014. Damien performs the financial/accounting role in the Company as well as the secretarial duties. Damien has been a member of the Institute of Chartered Accountants since 2002 and is a Graduate of the Australian Institute of Company Directors and a Member of the Governance Institute of Australia. Damien has been employed in the resources sector since 2005. He also provides Company Secretary and Chief Financial Officer services to other ASX-listed and unlisted entities.



Appendices

Reference to Technology Readiness Level (“TRL”) and Commercial Readiness Level (“CRL”) on Slides 14, 19, and 24.

Commercial Readiness Level

- 1 IP requirements identified
- 2 Secured entry to sub-sectors of market
- 3 Minimum viable product solution
- 4 Customer problems validated
- 5 Customer relationships established
- 6 Revenue model verified
- 7 Prototype solution validation
- 8 Growth model realisation
- 9 Customers acquired

Technology Readiness Level

- 1 Scientific research begins
- 2 Basic principles observed & reported
- 3 Proof-of-concept validation
- 4 Basic technology elements integrated
- 5 Validation in relevant environment
- 6 Prototype demonstration (controlled)
- 7 System prototype demonstration (operational)
- 8 Systems integration at scale
- 9 System validation

